2003
VOLVO
V70

This manual deals with the operation and care of your Volvo.

Welcome to the worldwide family of Volvo owners. We trust that you will enjoy many years of safe

driving in your Volvo, an automobile designed with your safety and comfort in mind. To help ensure your satisfaction with this vehicle, we encourage you to familiarize yourself with the equipment descriptions, operating instructions and maintenance requirements/recommendations in this manual. We also urge you and your passengers to wear seat belts at all times in this or any other automobile. And, of course, please do not operate a vehicle if you may be affected by alcohol, medication or any impairment that could hinder your ability to drive.
Your Volvo is designed to meet all applicable safety and emission standards, as evidenced by the certification labels attached to the driver's door opening and on the left wheel housing in the engine compartment.

For further information please contact your retailer, or:

In the USA:	**In Canada:**
Volvo Cars of North America	Volvo Canada Ltd.
Customer Relations	175 Gordon Baker Road
P.O. Box 914	North York, Ontario M2H 2N7
Rockleigh, New Jersey 07647-0914	800-663-8255
800-458-1552	

We also invite you to visit our Home Page on the Internet at:

http://www.volvocars.com

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HomeLink® Universal Transceiver (option)

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General information

Shiftlock

When your car is parked, the gear selector is locked in the (P)ark position. To release the selector from this position, turn the ignition key to position II (or start the engine), depress the brake pedal, press the button on the front of the gear selector knob and move the selector from (P)ark.

Keylock

This means that when you switch off the ignition, the gear selector must be in the (P)ark position before the key can be removed from the ignition switch.

Anti-lock Brake System (ABS)

The ABS system in your car performs a self-diagnostic test when the vehicle first reaches the speed of approximately 12 mph (20 km/h). The brake pedal will pulsate several times and a sound may be audible from the ABS control module. This is normal.

Fuel filler door

Press the button on the light switch panel (see page 34) when the car is at a standstill to unlock the fuel filler door. Please note that the fuel filler door will remain unlocked until the car begins to move forward. An audible click will be heard when the fuel filler door relocks.

Fuel filler cap

After refueling, close the fuel filler cap by turning it clockwise until it *clicks* into place. If this cap is not closed tightly or if the engine is running when the car is refueled, the Malfunction Indicator Lamp

("Check Engine" light) may indicate a fault.

Important

Before you operate your car for the first time, please familiarize yourself with the new-engine oil consumption information on page 135. You should also be familiar with the information in the chapters one, two and four of this manual.

Information contained in the balance of the manual is extremely useful and should be read after operating the vehicle for the first time.

The manual is structured so that it can be used for reference. For this reason, it should be kept in the car for ready access.

Do not export your Volvo to another country before investigating that country's applicable safety and exhaust emission requirements. In some cases it may be difficult or impossible to comply with these requirements. Modifications to the emission control system(s) may render your Volvo not certifiable for legal operation in the U.S., Canada and other countries.

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication. Please note that some vehicles may be equipped differently, depending on special legal requirements and that optional equipment described in this manual may not be available in all markets.

Volvo reserves the right to make model changes at any time, or to change specifications or design, without notice and without incurring obligation.

CALIFORNIA Proposition 65 Warning
WARNING! Engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the state of California to cause cancer, and birth defects or other reproductive harm. In addition, certain fluids contained in vehicles and certain products of component wear contain or emit chemicals known to the State of California to cause cancer, and birth defects or other reproductive harm.

Volvo and the environment

Volvo is committed to the well being of our customers. As a natural part of this commitment, we care about the environment in which we all live. Caring for the environment means an everyday involvement in reducing our environmental impact.

Volvo's environmental activities are based on a holistic view, which means we consider the overall environmental impact of a product throughout its complete life cycle. In this context, design, production, product use, and recycling are all important considerations.

In production, Volvo has partly or completely phased out several chemicals including freons, lead chromates, naphtanates, asbestos, mercury and cadmium; and reduced the amount of chemicals used in our plants 50% since 1991.

In use, Volvo was the first in the world to introduce into production a three-way catalytic converter with a Lambda sond, now called oxygen sensor, in 1976. The current version of this highly efficient system reduces emissions of harmful substances (CO, HC, NOx) from the exhaust pipe by approximately 95% and the search to eliminate the remaining emissions continues. Volvo is the only automobile manufacturer to offer CFC-free retrofit kits for the air conditioning system for all models as far back as the M/Y 1975 240. Advanced electronic engine controls, refined purification systems and cleaner fuels are bringing us closer to our goal.

After Volvo cars and parts have fulfilled their use, recycling is the next critical step in completing the life cycle. The metal content is about 75% of the total weight of a car, which makes the car among the most recycled industrial products. In order to have efficient and well controlled recycling, many Volvo variants have printed dismantling manuals, indicating the weight and material of individual components. For Volvo, all homogeneous plastic parts weighing more than 1.7 oz. (50 grams) are marked with international symbols that indicate how the component is to be sorted for recycling.

In addition to continuous environmental refinement of conventional gasoline-powered internal combustion engines, Volvo is actively looking at advanced technology alternative-fuel vehicles.

When you drive a Volvo, you become our partner in the work to lessen the car's impact on the environment.

To reduce your vehicle's environmental impact, you can:

- Maintain proper air pressure in your tires. Tests have shown decreased fuel economy with improperly inflated tires
- Follow the recommended maintenance schedule
- Drive at a constant speed
- See an authorized Volvo retailer as soon as possible for inspection if the check engine (malfunction indicator) lamp illuminates, or stays on after the vehicle has started
- Properly dispose of any vehicle related waste such as used motor oil, used batteries, brake pads, etc.
- When cleaning your car, use Volvo's own car care products, all of which have systematically been adapted to the environment

Prem-Air®

On the surface of the radiator in the engine compartment, there is a special coating called Prem-Air®. Prem-Air® works as a catalytic converter, converting most of the ozone passing through the radiator into oxygen, thereby reducing harmful ground-level ozone.

For additional information regarding the environmental activities in

which Volvo Cars of North America, LLC. and Volvo Car of Canada, Ltd. are involved, visit our Internet Home Page at:
http://www.volvocars.com

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2003 VOLVO V70

Chapter 1 - Safety

pg. 1 Safety

Not wearing a seat belt is like believing "It'll never happen to me!" Volvo, the inventor of the three-point seat belt, urges you and all adult occupants of your car to wear seat belts and ensure that children are properly restrained, using an infant, car or booster seat determined by age, weight and height. Volvo also believes no child should sit in the front seat of a car.

Fact: In every state and province, some type of child-restraint legislation has been passed. Additionally, most states and provinces have already made it mandatory for occupants of a car to use seat belts.

So, urging you to "buckle up" is not just our recommendation - legislation in your state or province may mandate seat belt usage. The few seconds it takes to buckle up may one day allow you to say, "It's a good thing I was wearing my seat belt."

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pg. 2 Seat belts

Seat belts

Always fasten the seat belts before you drive or ride. A chime will sound several times if the driver's seat belt is not fastened.

To buckle:

Pull the belt out far enough to insert the latch plate into the receptacle until a distinct click is heard. The seat belt retractor is normally "unlocked" and you can move freely, provided that the shoulder belt is not pulled out too far. The retractor will lock up as follows:

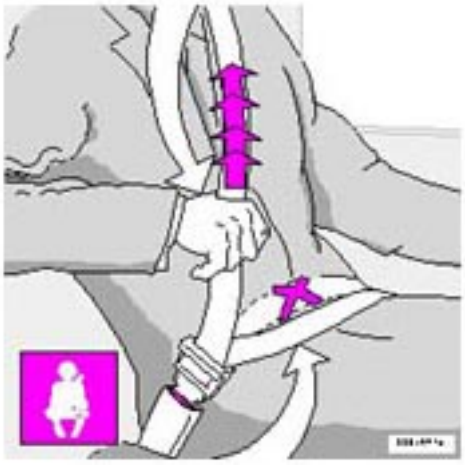
- if the belt is pulled out rapidly
- during braking and acceleration
- if the vehicle is leaning excessively
- when driving in turns

For the seat belt to provide maximum protection in the event of an accident, it must be worn correctly. When wearing the seat belt remember:
- The belt should not be twisted or turned.
- The lap belt must be positioned low on the hips (not pressing against the abdomen).

Make sure that the shoulder belt is rolled up into its retractor and that the shoulder and lap belts are taut.

Before exiting the car, check that the seat belt retracts fully after being unbuckled. If necessary, guide the belt back into the retractor slot.

NOTE: Legislation in your state or province may mandate seat belt usage.



Adjusting shoulder belt
Lap portion of the belt should sit low

Child seats: Please refer to page 14 for information on securing child seats with the seat belts.

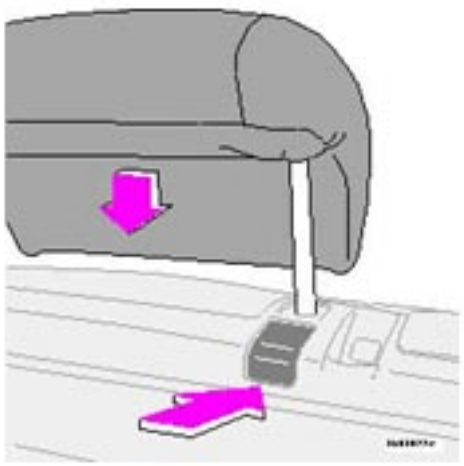
During pregnancy

Pregnant women should always wear seat belts. Remember that the belt should always be positioned in such a way as to avoid any possible pressure on the abdomen. The lap portion of the belt should be located low, as shown in the above illustration.

pg. 3 Seat belts, Center head restraint

WARNING!

- Never use a seat belt for more than one occupant.
- Never wear the shoulder portion of the belt under the arm, behind the back or otherwise out of position. Such use could cause injury in the event of an accident.
- As the seat belts lose much of their strength when exposed to violent stretching, they should be replaced after any collision, even if they appear to be undamaged.
- Never repair the belt on your own; have this work done by an authorized Volvo retailer only.
- Any device used to induce slack into the shoulder belt portion of the three-point belt system will have a detrimental effect on the amount of protection available to you in the event of a collision.
- The seat back should not be tilted too far back. The shoulder belt must be taut in order to function properly.
- Do not use child safety seats or child booster cushions/backrests in the front passenger's seat. We also recommend that children who have outgrown these devices sit in the rear seat with the seat belt properly fastened.



Adjust head restraint height

Center head restraint (rear)

The center head restraint can be adjusted according to the passenger's height. The restraint should be carefully adjusted to support the occupant's head.

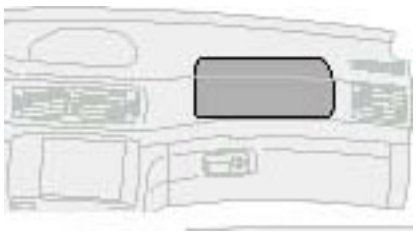
To raise, lift up to desired position. To lower the center head restraint, press the release button behind the right-hand support while pressing down the head restraint to the desired position.

WARNING!

- As its name implies, SRS is designed to be a SUPPLEMENT to - not a replacement for - the three-point belt system. For maximum protection, wear seat belts at all times. Be aware that no system can prevent all possible injuries that may occur in an accident.
- When installing any accessory equipment, make sure that the SRS system is not damaged. Do not attempt to service any component of the SRS yourself. Attempting to do so may result in serious personal injury. If a problem arises, take your car to the nearest authorized Volvo retailer for inspection as soon as possible.

pg. 4 Front airbags - SRS

Driver's side airbag - in steering wheel hub



Passenger's side airbag - above glove compartment

As an enhancement to the three-point seat belt system, your Volvo is equipped with a Supplemental Restraint System (SRS). The Volvo SRS consists of an airbag (2) on both the driver's and passenger's sides and seat belt tensioners in both front door pillars (4). The system is designed to supplement the protection provided by the three-point seat belt system. All three rear seat belts are also equipped with tensioners.

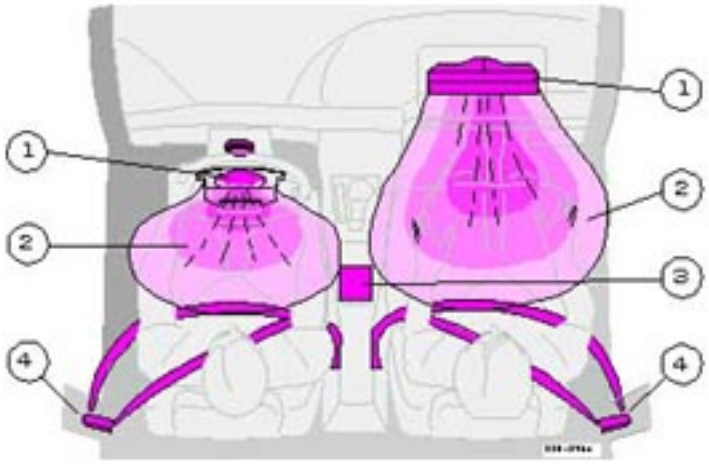
The SRS system is indicated by the "SRS" embossed on the steering wheel pad and above the glove compartment, and by decals on both sun visors and on the front and far right side of the dash.

The airbags are folded and located in the steering wheel hub and above the glove compartment. They are designed to deploy during certain frontal or front-angular collisions, impacts, or decelerations, depending on the crash severity, angle, speed and object impacted. The airbags may also deploy in certain non-frontal collisions where rapid deceleration occurs.

The airbag system includes gas generators (1) surrounded by the airbags (2) and front seat belt tensioners for both of the front seats (4). To deploy the system, the sensor (3) activates the gas generators causing the airbags to be inflated with nitrogen gas. As the movement of the seats' occupants compresses the airbags, some of the gas is expelled at a controlled rate to provide better cushioning.

Both seat belt tensioners also deploy, minimizing any seat belt slack.

The entire process, including inflation and deflation of the airbags, takes approximately two-tenths of a second.



WARNING!

- As its name implies, SRS is designed to be a SUPPLEMENT to -not a replacement for - the three-point belt system. For maximum protection, wear seat belts at all times. Be aware that no system can prevent all possible injuries that may occur in an accident.
- When installing any optional equipment, make sure that the SRS system is not damaged. Do not attempt to service any component of the SRS yourself. Attempting to do so may result in serious personal injury. If a problem arises, take your car to the nearest authorized Volvo retailer for inspection as soon as possible.

pg. 5 Front airbags - SRS

A self-diagnostic system incorporated in the sensor monitors the SRS. This system does not, however,

monitor the Side Impact Protection System (SIPS) airbags. If a fault is detected, the warning light will illuminate. The light is included in the warning/indicator light cluster in the instrument panel. Normally, the SRS warning lamp should light up when the ignition key is turned to positions I, II or III and should go out after 7 seconds or when the engine is started. Check that this light is functioning properly every time the car is started.

The following items are monitored by the self-diagnostic system:

- Sensor unit
- Cable harness
- Gas generator igniters

WARNING!

- Never drive an SRS equipped car with your hands on the steering wheel pad / airbag housing.
- No objects, accessory equipment or stickers may be placed on, attached to or installed near the SRS cover in the center of the steering wheel, the SRS cover above the glove compartment or the area affected by airbag deployment.
- If the SRS warning light stays on after the engine has started or if it comes on while you are driving, drive the car to the nearest authorized Volvo retailer for inspection as soon as possible.

Above: Sample label found on all tensioner-equipped seat belts. The label is sewn into the belt near its lower anchorage point

Above: Sample SRS service decal, which can be found on the edge of the left rear door

There is no maintenance to perform on the SRS yourself. The month and year shown on the decal on the door pillar indicate when you should contact your Volvo retailer for specific servicing or replacement of airbags and seat belt tensioners. This service must be performed by an authorized Volvo retailer.

Should you have any questions about the SRS system, please contact your authorized Volvo retailer or Volvo Customer Support:

In the USA:
Volvo Cars of North America
Customer Relations
P.O. Box 914
Rockleigh, New Jersey 07647-0914
800-458-1552

In Canada:
Volvo Cars of Canada Ltd.
175 Gordon Baker Road
North York, Ontario M2H 2N7
800-663-8255

pg. 6 Front airbags - SRS

SRS text on outside of both sun visors

SRS text on inside of both sun visors

SRS text on the passenger's dash

SRS decal at far right of instrument panel

WARNING!
Do not use child safety seats or child booster cushions/backrests in the front passenger's seat. We also recommend that occupants under 4 feet 7 inches (140 cm) in height who have outgrown these devices sit in the rear seat with the seat belt fastened.

NOTE: Deployment of SRS components occurs only one time during an accident. In a collision where deployment occurs, the air bags and seat belt tensioners activate. Some noise occurs and a small amount of powder is released. The release of the powder may appear as smoke-like matter. This is a normal characteristic and does not indicate fire.

NOTE: Volvo's dual-threshold airbags use special sensors that are integrated with the front seat buckles. The point at which the air bag deploys is determined by whether or not the seat belt is being used, as well as the severity of the collision. Collisions can occur where only one of the airbags deploys.

NOTE: Volvo's dual-stage airbags: If the impact is less severe, but severe enough to present a clear injury risk, the dual-stage airbags are triggered at just 70% of its total capacity. If the impact is more severe, the dual-stage airbags are triggered with full capacity.

WARNING!

- Children must never be allowed in the front passenger seat. Volvo recommends that ALL occupants (adults and children) shorter than 4 feet 7 inches (140 cm) be seated in the back seat of any vehicle with a passenger-side front airbag. See page 14 for guidelines.
- Occupants in the front passenger's seat must never sit on the edge of the seat, sit leaning toward the instrument panel or otherwise sit out of position. The occupant's back must be as upright as comfort allows and be against the seat back with the seat belt properly fastened.
- Feet must be on the floor, e.g. not on the dash, seat or out of the window.
- No objects or accessory equipment, e.g. dash covers, may be placed on, attached to or installed near the SRS hatch (the area above the glove compartment) or the area affected by airbag deployment (see illustration on page 4).
- There should be no loose articles, e.g. coffee cups, on the floor, seat or dash area.
- Never try to open the SRS cover on the steering wheel or the passenger side dash. This should only be done by an authorized Volvo service technician.
- Failure to follow these instructions can result in injury to the vehicle occupants.

pg. 7 Front airbags - SRS

NOTE: The information on this page does not pertain to the Side Impact Protection System airbags.

When are the airbags deployed?

The SRS system is designed to deploy during certain frontal or front-angular collisions, impacts, or decelerations, depending on the crash severity, angle, speed and object impacted. The SRS sensor is designed to react to both the impact of the collision and the inertial forces generated by it and to determine if the intensity of the collision is sufficient for the airbags to be deployed.

WARNING!
The SRS is designed to help prevent serious injury. Deployment occurs very quickly and with considerable force. During normal deployment and depending on variables such as seating position, one may experience abrasions, bruises, swellings, or other injuries as a result of airbag(s) deployment.

If the airbags have been deployed, we recommend the following:

- Have the car towed to an authorized Volvo retailer. Never drive with the airbags deployed.
- Have an authorized Volvo retailer replace the SRS system components.
- Use only new, Genuine Volvo Parts when replacing SRS components (airbags, seat belts, tensioners, etc.).

When are the airbags NOT deployed?

Not all frontal collisions activate the SRS system. If the collision involves a nonrigid object (e.g., a snow drift or bush), or a rigid, fixed object at a low speed, the SRS system will not necessarily deploy. Front airbags do not normally deploy in a side impact collision, in a collision from the rear or in a rollover situation. The amount of damage to the bodywork does not reliably indicate if the airbags should have deployed or not.

Seat belts - the heart of the Volvo safety system

The heart of the Volvo safety system is the **three-point seat belt** (a Volvo invention)! In order for the SRS system to provide the protection intended, seat belts must be worn at all times by everyone in the car. **The SRS system is a supplement to the seat belts.**

WARNING!
If your car has been subjected to flood conditions (e.g. soaked carpeting/standing water on the floor of the vehicle) or if your car has become flood-damaged in any way, do not attempt to start the vehicle or put the key in the ignition before disconnecting the battery (see below). This may cause airbag deployment which could result in personal injury. Have the car towed to an authorized Volvo retailer for repairs.

Automatic transmission:

Before attempting to tow the car, use the following procedure to override the shiftlock system to move the gear selector to the neutral position.

- Switch off the ignition for at least 10 minutes and disconnect the battery
- Wait at least one minute
- Insert the key in the ignition and turn it to position II
- Press firmly on the brake pedal.
- Move the gear selector from (P)ark to the (N)eutral position.

WARNING!
Never drive with the airbags deployed. The fact that they hang out can impair the steering of your car. Other safety systems can also be damaged. The smoke and dust formed when the airbags are deployed can cause skin and eye irritation in the event of prolonged exposure.

pg. 8 Side impact airbags (SIPS)

*SIPS airbag **

SIPS airbag (front seats only)

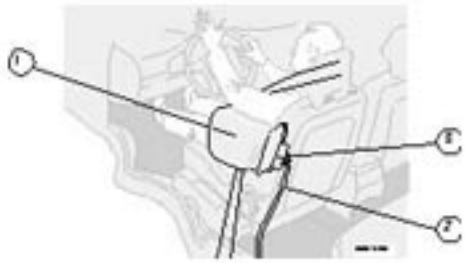
As an enhancement to the structural Side Impact Protection System built into your car, the car is also equipped with Side Impact Protection System (SIPS) airbags. The SIPS airbag system consists of airbag modules built into the sides of both front seat backrests (1), wires (2) and gas generators/sensor units (3). The SIPS airbag system is designed to help increase occupant protection in the event of certain side impact collisions. The SIPS airbags are designed to deploy only during certain side-impact collisions, depending on the crash severity, angle, speed and point of impact. The airbags are not designed to deploy in all side impact situations.

WARNING!

- The SIPS airbag system is a supplement to the Side Impact Protection System and the three-point seat belt system. It is not designed to deploy during collisions from the front or rear of the car or in rollover situations.
- The use of seat covers on the front seats may impede SIPS airbag deployment.
- No objects, accessory equipment or stickers may be placed on, attached to or installed near, the SIPS airbag system or in the area affected by SIPS airbag deployment (see illustration below).
- Never try to open or repair any components of the SIPS airbag system. This should be done only by an authorized Volvo service technician.
- In order for the SIPS airbag to provide its best protection, both front seat occupants should sit in an upright position with the seat belt properly fastened.

NOTE: SIPS airbag deployment (one airbag) occurs only on the side of the vehicle affected by the impact.

*A SIPS airbag warning decal is also located at the end of the instrument panel on the driver's side of the car.

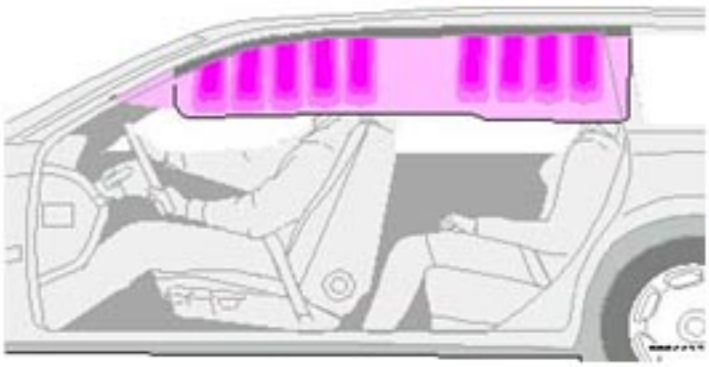


1 - Airbag, 2 - wire, 3 - gas generator/sensor unit

WARNING!

- Never drive with the airbags deployed. The fact that they hang out can impair the steering of your car. Other safety systems can also be damaged. The smoke and dust formed when the airbags are deployed can cause skin and eye irritation in the event of prolonged exposure.
- If your car has been subjected to flood conditions (e.g. soaked carpeting/ standing water on the floor of the vehicle) or if your car has become flood-damaged in any way, do not attempt to start the vehicle or put the key in the ignition before disconnecting the battery. This may cause airbag deployment which could result in personal injury. Have the car towed to an authorized Volvo retailer for repairs.

pg. 9 Volvo Inflatable Curtain (VIC)



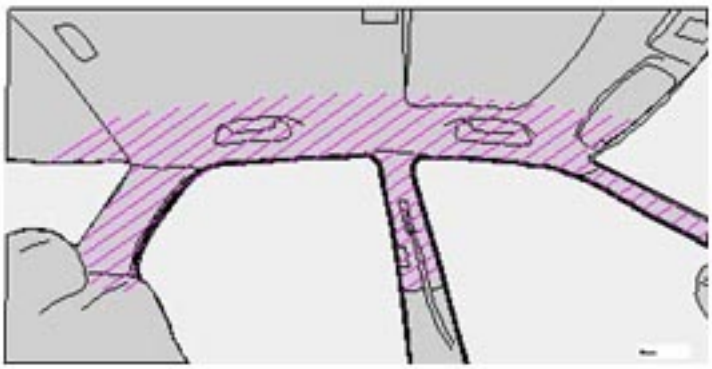
Volvo Inflatable Curtain (VIC)

This system consists of inflatable curtains located along the sides of the roof liners, stretching from the center of both front side windows to the rear edge of the rear side door windows. It is designed to help protect the heads of the occupant of the front seat and the occupant of the outboard rear seat position in certain side impact collisions.

NOTE: IC system deployment occurs only on the side of the vehicle affected by the impact.

In certain side impacts, **BOTH** the Inflatable Curtain (IC) and the Side Impact Airbag System (SIPS-bag) will deploy, whereas, in some cases, **ONLY** the Inflatable Curtain (IC) will deploy. In cases where **BOTH** the IC and the SIPS-bag deploy, deployment will occur simultaneously.

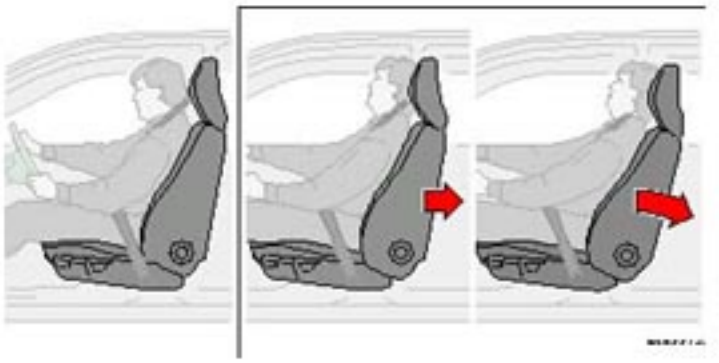
If the inflatable curtain deploys, it remains inflated for approximately 3 seconds.



WARNING!

- The IC system is a supplement to the Side Impact Protection System. It is not designed to deploy during collisions from the front or rear of the car or in rollover situations.
- Never try to open or repair any components of the IC system. This should be done only by an authorized Volvo service technician.
- The inflatable curtains are designed to deploy only during certain side-impact collisions, depending on the crash severity, angle, speed and impact. The inflatable curtains are not designed to deploy in all side impact situations.
- In order for the IC to provide its best protection, both front seat occupants and both outboard rear seat occupants should sit in an upright position with the seat belt properly fastened; adults using the seat belt and children using the proper child restraint system. Only adults should sit in the front seats. Children must never be allowed in the front passenger seat. See page 14 for guidelines. Failure to follow these instructions can result in injury to the vehicle occupants.
- When the rear seat backrest(s) are folded down, the car should not be loaded to a level higher than 2 in. (5 cm) below the upper edge of the rear passenger door windows. Objects placed higher than this level could impede the function of the inflatable curtain.

pg. 10 Whiplash Protection System (WHIPS)



Whiplash Protection System (WHIPS) - front seats only

The WHIPS system consists of specially designed hinges and brackets on the front seat backrests and head restraints designed to help absorb some of the energy generated in a collision from the rear ("rear-ended").

In the event of a collision of this type, the hinges and brackets of the front seat backrests are designed to change position slightly to allow the backrest/head restraint to help support the occupant's head before moving slightly rearward. This movement helps absorb some of the forces that could result in the whiplash effect.

Do not wedge boxes, suitcases, etc. behind front seats

WARNING!

- Any contact between the front seat backrests and the folded rear seat could impede the function of the WHIPS system. If the rear seat is folded down, the occupied front seats must be adjusted forward so that they do not touch the folded rear seat.
- Boxes, suitcases, etc. wedged behind the front seats (see illustration above) could impede the function of the WHIPS system.
- The WHIPS system is designed to supplement the other safety systems in your car. For this system to function properly, the three-point seat belt must be worn. Please be aware that no system can prevent all possible injuries that may occur in an accident.
- If your car has been involved in a collision, the front seat backrests must be inspected by an authorized Volvo retailer even if the seats appear to be undamaged. Certain components in the WHIPS system may need to be replaced. Do not attempt to service any component in the WHIPS

system yourself.

- If the rear seat backrests are folded down, cargo must be secured to prevent it from sliding forward against the front seat backrests in the event of a collision from the rear. This could interfere with the action of the WHIPS system.
- The WHIPS system is designed to function in certain collisions from the rear, depending on the crash severity, angle and speed.
- Occupants in the front seats must never sit out of position. The occupant's back must be as upright as comfort allows and be against the seat back with the seat belt properly fastened.

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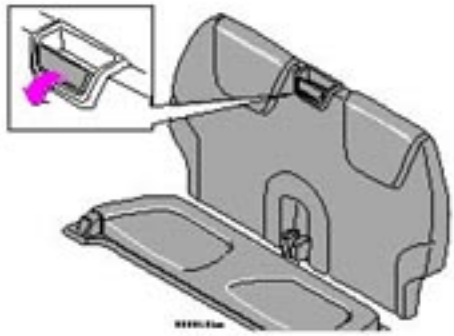
pg. 11 Child safety



If all the seats are occupied, a rear-facing auxiliary seat in the cargo area can be used. This seat is designed for two children, each weighing between 50 - 88 lbs. (23 - 40 kg) with a total seat capacity of 176 lbs. (80 kg) and up to 55 inches (140 cm) in height.

Raising

Remove the cargo area cover, if installed, from the car. Raise the backrest section forward until it locks in place.

Flip the seat cushion over.

Lowering

Flip the seat cushion back into storage position.

Pull the release handle and lower the backrest to storage position.

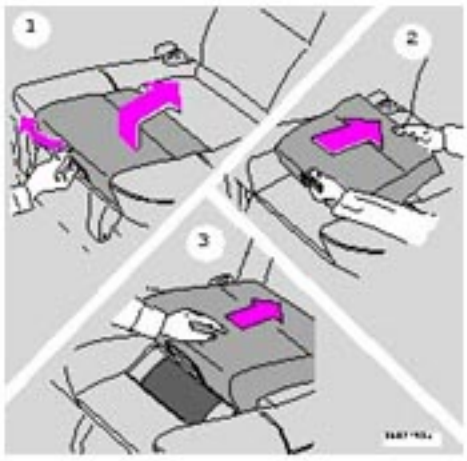
WARNING!
Both rear seat backrests must be up when the auxiliary seat is being used. Do not use a booster cushion or child seat in conjunction with the auxiliary seat. The luggage net should be retracted and the child safety lock in the tailgate should be open to allow access to the cargo area.

WARNING!
The exhaust pipe will still be hot when the engine is turned off. Take care that children do not burn themselves when they get into or out of the car.

pg. 12 Child safety

Integrated booster cushions, outboard positions (optional)

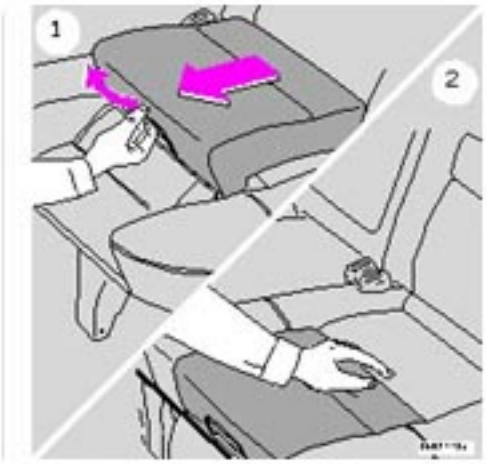
Volvo's own integrated booster cushions have been specially designed to help safeguard a child seated in the rear seat. When using an integrated booster cushion, the child must be secured with the vehicle's three-point seat belt. This child seat is designed for use only by children who weigh between 33 and 80 lbs (15 and 36 kg) and whose height is between 38 and 54 in. (97 and 137 cm).



Integrated booster cushion - outboard positions

Outboard integrated booster cushions - Raising

1. Pull the handle at the front of the cushion forward. 2. With both hands push the cushion rearward. 3. Push the cushion until it locks in place.



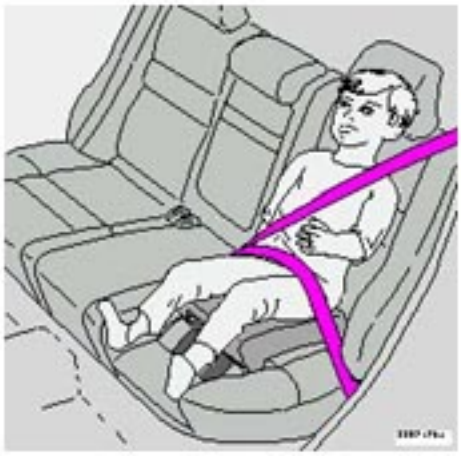
Integrated booster cushion - outboard positions

Outboard integrated booster cushions - Lowering

1. Pull the handle at the front of the cushion forward. 2. Push the cushion forward/ downward.

NOTE: The booster cushion must be completely lowered before the rear seat backrest can be folded down.

pg. 13 Child safety



The child should be properly seated on the booster cushion. The hip section of the three-point seat belt must fit snugly across the child's hips, not across the stomach. The shoulder section of the three-point seat belt should be positioned across the chest and shoulder (see illustration). The shoulder belt must never be placed behind the child's back or under the arm.

WARNING!

- Failure to follow the manufacturer's instructions on the use of this child restraint system can result in your child striking the vehicle's interior during a sudden stop or crash.
- In the event of a collision while the integrated booster cushion was occupied, the entire booster cushion and seat belt must be replaced. The booster cushion should also be replaced if it is badly worn or damaged in any way. This work should be performed by an authorized Volvo retailer only. The booster cushion should be cleaned while in place in the vehicle if possible. If not, please consult your Volvo retailer.

pg. 14 Child safety

Keeping child seats in place (ALR/ELR*)

To make child seat installation easier, each seat belt (except for the driver's belt) is equipped with a locking mechanism to help keep the seat belt taut.

When attaching the seat belt to a child seat:

- Attach the seat belt to the child seat according to the child seat manufacturer's instructions.
- Pull the seat belt out as far as possible.
- Insert the seat belt latch plate into the buckle (lock) in the usual way.
- Release the seat belt and pull it taut around the child seat.

A sound from the seat belt retractor will be audible at this time and is normal.

The belt will now be locked in place.

This function is automatically disabled when the seat belt is unlocked and the belt is fully retracted.

* Automatic Locking Retractor/Emergency Locking Retractor

Important!

Why Volvo believes no child should sit in the front seat of a car. It's quite simple really. A front air bag is a very powerful device designed, by law, to help protect an adult. Because of the size of the air bag and its speed of inflation, a child should never be placed in the front seat, even if he or she is properly belted or strapped into a child safety seat. Volvo has been an innovator in safety for over fifty years, and we'll continue to do our part. But we need your help. Please remember to put your children in the back seat, and buckle them up.

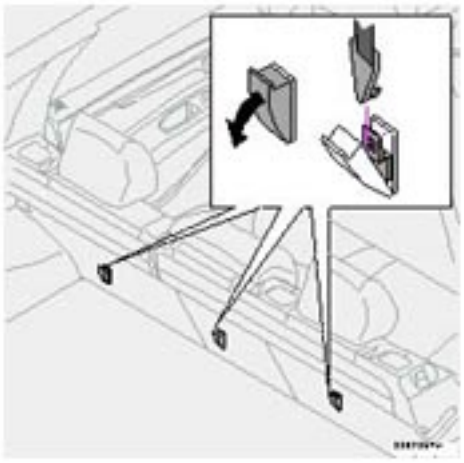
Volvo has some very specific recommendations:

- Always wear your seat belt.
- Air bags are a SUPPLEMENTAL safety device which, when used with a three-point seat belt can help reduce serious injuries during certain types of accidents. Volvo recommends that you do not disconnect the air bag system in your vehicle.
- Volvo strongly recommends that ALL children sit in the rear seat of any vehicle and that they be properly restrained.
- A child should NEVER sit in the front passenger seat of any vehicle equipped with a passenger-side front airbag.
- Volvo recommends that ALL occupants (adults and children) shorter than four feet seven inches (140 cm) be seated in the back seat of any vehicle with a front passenger side airbag.

Drive safely!

WARNING!
Do not use child safety seats or child booster cushions/backrests in the front passenger's seat. We also recommend that children who have outgrown these devices sit in the rear seat with the seat belt properly fastened.

pg. 15 Child safety



Child Restraint Anchorages

Volvo cars are fitted with child restraint top tether anchorages in the rear seat.

Refer to the child seat manufacturer's instruction for information on securing the child seat.

WARNING!
Child Restraint Anchorages are designed to withstand only those loads imposed by correctly fitted Child Restraints. Under no circumstances are they to be used for adult seat belts or harnesses. The anchorages are not able to withstand excessive forces on them in the event of collision if full harness seat belts or adult seat belts are installed to them. An adult who uses a belt anchored in a Child Restraint Anchorage runs a great risk of suffering severe injuries should a collision occur. Do not install rear speakers which would require the removal of the top tether anchors or interfere with the proper use of the top tether strap.

Isofix fasteners and Seat guides

The Isofix fasteners are installed in the outboard rear seat positions. One set of ISOFIX guides is also provided. Consult your Volvo retailer for more information on child safety accessories.

pg. 16 Child safety

Child safety

Volvo recommends the proper use of restraint systems for all occupants including children. Remember that, regardless of age and size, a child should always be properly restrained in a car.

Your car is also equipped with ISOFIX attachments, which make it more convenient to install child seats (see page 15).

Restraint systems for children are designed to be secured in the vehicle by lap belts or the lap portion of a lap-shoulder belt. Such child restraint systems can help protect children in cars in the event of an accident only if they are used properly. However, children could be endangered in a crash if the child restraints are not properly secured in the vehicle. Failure to follow the installation instructions for your child restraint can result in your child striking the vehicle's interior in a sudden stop.

Holding a child in your arms is NOT a suitable substitute for a child restraint system. In an accident, a child held in a person's arms can be crushed between the vehicle's interior and an unrestrained person. The child could also be injured by striking the interior, or by being ejected from the vehicle during a sudden maneuver or impact. The same can also happen if the infant or child rides unrestrained on the seat. Other occupants should also be properly restrained to help reduce the chance of injuring or increasing the injury of a child.

All states and provinces have legislation governing how and where children should be carried in a car. Find out the regulations existing in your state or province. Recent accident statistics have shown that children are safer in rear seating positions than front seating positions when properly restrained. A child restraint system can help protect a child in a vehicle. Here's what to look for when selecting a child restraint system:

- It should have a label certifying that it meets applicable Federal Motor Vehicle Safety Standards (FMVSS 213) - or in Canada, CMVSS 213.
- Make sure the child restraint system is approved for the child's height, weight and development - the label required by the standard or regulation, or instructions for infant restraints, typically provide this information.
- **In using any child restraint system, we urge you to look carefully over the instructions that are**

provided with the restraint. Be sure you understand them and can use the device properly and safely in this vehicle. A misused child restraint system can result in increased injuries for both the infant or child and other occupants in the vehicle.

A child who has outgrown the child safety seat should use the rear seat with the standard seat belt fastened. Place the child on an approved cushion so that the seat belt is properly located on the child's hips (see page 13).Legislation in your state or province may mandate the use of a child seat or cushion in combination with the seat belt, depending on the child's age and/or size. Please check local regulations.

A specially designed and tested booster cushion (not available in Canada) for children between 50 - 80 lbs (22.7 - 36 kg) and 38 -54 inches (97 - 137 cm) in height can be obtained from your Volvo retailer.

If necessary, an auxiliary seat for children is available for use in the luggage compartment of station wagon models. This seat is designed for two children, each weighing between 50 - 88 lbs. (23 - 40 kg) and up to 59 inches (150 cm) in height.

WARNING!

- When using the auxiliary seat for children, both sections of the rear seat backrest must be secured in the upright position.
- Do not use a booster cushion or child seat in conjunction with the auxiliary seat.

pg. 17 Occupant safety

Seat belt maintenance

Check periodically that the seat belts are in good condition. Use water and a mild detergent for cleaning. Check seat belt mechanism function as follows: Attach the seat belt and pull rapidly on the strap.

Volvo Concern for Safety

Safety is the cornerstone of Volvo. Our concern dates back to 1927 when the first Volvo rolled off the production line. Three-point seat belts (a Volvo invention), safety cages, and energy-absorbing impact zones were designed into Volvo cars long before it was fashionable or required by government regulation. We will not compromise our commitment to safety. We continue to seek out new safety features and to refine those already in our cars. You can help. We would appreciate hearing your suggestions about improving automobile safety. We also want to know if you ever have a safety concern with your car. Call us in the U.S. at: 800-458-1552 or in Canada at: 800-663-8255.

Occupant safety

How safely you drive doesn't depend on how old you are but rather on:
- How well you see.
- Your ability to concentrate.
- How quickly you make decisions under stress to avoid an accident.

The tips listed below are suggestions to help you cope with the ever changing traffic environment.
- Never drink and drive.
- If you are taking any medication, consult your physician about its potential effects on your driving abilities.
- Take a driver-retraining course
- Have your eyes checked regularly
- Keep your windshield and headlights clean.
- Replace wiper blades when they start to leave streaks.
- Take into account the traffic, road, and weather conditions, particularly with regard to stopping distance.

Reporting Safety Defects in the U.S.

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Volvo Cars of North America. If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your retailer, or Volvo Cars of North America. To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 202-366-0123 in Washington, D.C. area) or write to: NHTSA, U. S. Department of Transportation, Washington D.C. 20590. You can also obtain other information about motor vehicle safety from the Hotline.

Volvo strongly recommends that if your vehicle is covered under a service campaign, safety or emission recall or similar action, it should be completed as soon as possible. Please check with your local retailer or Volvo Cars of North America, LLC. if your vehicle is covered under these conditions.

NHTSA can be reached at:
Internet : http://www.nhtsa.dot.gov

Telephone:
1-888-DASH-2-DOT (1-888-327-4236) (toll free)
1-800-424-9393 (toll free)
1-202-366-0123 (in Washington DC area)

pg. 18 Brake system

BRAKE Brake circuit malfunction

The brake system is a hydraulic system consisting of two master cylinders and two separate brake circuits. If a problem should occur in one of these circuits, it is still possible to stop the car with the other brake circuit.

If the brake pedal must be depressed farther than normal and requires greater foot pressure, the stopping distance will be longer.

A warning light in the instrument panel will light up to warn the driver that a fault has occurred.

If this light comes on while driving or braking, stop immediately and check the brake fluid level in the reservoir.

NOTE: Press the brake pedal hard and maintain pressure on the pedal - do **not** pump the brakes.

WARNING!
If the fluid level is below the MIN mark in the reservoir: DO NOT DRIVE. Tow the car to a Volvo retailer and have the brake system inspected.

NOTE: When the car is at a standstill and the engine is idling, e.g. at a traffic light and the brake pedal is depressed, the pedal may go down slightly. This is normal and is caused by an built-in function in the power brake system.

Power brakes function only when the engine is running

The power brakes utilize vacuum pressure which is only created when the engine is running. Never let the vehicle roll to a stop with the engine switched off.
If the power brakes are not working, the brake pedal must be pressed approximately four times harder than usual to make up for the lack of power assistance. This can happen for example when towing your vehicle or if the engine is switched off when the vehicle is rolling. The brake pedal feels harder than usual.

Water on brake discs and brake pads affects braking

Driving in rain and slush or passing through an automatic car wash can cause water to collect on the brake discs and pads. This will cause a delay in braking effect when the pedal is depressed. To avoid such a delay when the brakes are needed, depress the pedal occasionally when driving through rain, slush etc. This will remove the water from the brakes. Check that brake application feels normal. This should also be done after washing or starting in very damp or cold weather.

Severe strain on the brake system

The brakes will be subject to severe strain when driving in mountains or hilly areas or towing. Vehicle speed is usually slower, which means that the cooling of the brakes is less efficient than when driving on level roads. To reduce the strain on the brakes, shift into a lower gear and let the engine help with the braking. Do not forget that, if you are towing a trailer, the brakes will be subjected to a greater than normal load.

pg. 19 Anti-lock Brake System (ABS)

Anti-lock Brake System (ABS)

If the warning lamp lights up there is a malfunction of the ABS system (the standard braking system will however function) and the vehicle should be driven cautiously to a Volvo retailer for inspection. The Anti-lock Braking System (ABS) helps to improve vehicle control (stopping and steering) during severe braking conditions by limiting brake lockup. When the system "senses" impending lockup, braking pressure is automatically modulated in order to help prevent lockup, which could lead to a skid.

The system performs a self-diagnostic test when the engine is started and when the vehicle first reaches a speed of approximately 12 mph (20 km/h). The brake pedal will pulsate several times and a sound may be audible from the ABS control module. This is normal.

To obtain optimal effect from the ABS system, constant pressure should be kept on the brake pedal, keep constant pressure on the brake pedal. Do not pump the brake pedal.

The switching of the ABS modulator will be audible and the brake pedal will pulsate during braking. Please be aware that ABS does not increase the absolute braking potential of the vehicle. While control will be enhanced, ABS will not shorten stopping distances on slippery surfaces.

ABS with EBD (Electronic Brake Force Distribution)

EBD is an integrated part of the ABS system. EBD regulates the hydraulic pressure to the rear brakes to help provide optimal braking capacity. The brake pedal will pulsate during braking, which is normal.

If the BRAKE and ABS warning lights come on at the same time, this could indicate a fault in the brake system.

- Stop the car in a suitable place and switch off the engine.
- Restart the engine.
- If both warning lights go off, no further action is required.
- If both lights are still on after the engine has been restarted, switch off the engine again and check the brake fluid level (see page 137 and for the location of the brake fluid reservoir).

WARNING!
If the fluid level is below the MIN mark in the reservoir, DO NOT DRIVE. Have the car towed to an authorized Volvo retailer and have the brake system inspected.

- If the brake fluid level is above the MIN mark, drive carefully to an authorized Volvo retailer and have the brake system inspected.

pg. 20 STC/DSTC

Stability Traction Control (STC)*/ Dynamic Stability Traction Control (DSTC)**

The stability systems consist of a number of functions:

The following two functions are common to both STC/DSTC
1. Traction control (TC)
This function is designed to help reduce wheel spin by transferring power from a drive wheel that begins to lose traction to the wheel on the opposite side of the car (on the same axle). TC monitors and compares the rotational speed of the drive wheels. If one of the drive wheels shows a tendency to spin, the difference in speed is immediately detected. This triggers the Anti-lock Brake System, which brakes the spinning wheel until the difference in rotational speed is corrected.
TC is most active at low speeds, and a pulsating sound will be audible when the system is regulating wheel spin. This is quite normal.
This is one of the STC/DSTC's permanent functions and is not affected when the button on the center control panel is pressed.

2. Spin control (SC)
The spin control function is designed to help prevent the drive wheels from spinning while the car is

accelerating. This is done by temporarily reducing engine torque to the drive wheels, which helps improve tractive force.

Under certain circumstances, such as when driving with snow chains, or driving in deep snow or loose sand, it may be advisable to temporarily switch off this function for maximum tractive force. This is done by pressing the STC/DSTC button on the center control panel for at least a half a second.

When the SC function has been switched off:
- The text window will briefly display "SPIN CONTROL OFF"
- The LED in the STC/DSTC button will be off.

The following two functions are only available with DSTC:
3. Active Yaw Control (AYC)
This function helps maintain directional stability, for example when cornering, by braking one or more of the wheels if the car shows a tendency to skid or slide laterally. This is done by activating the Anti-lock Braking System. A pulsating sound will be audible when the function is active, which is quite normal. If you apply the brakes while this function is active, the brake pedal will feel stiffer than usual.

This is also one of the DSTC system's permanent functions and is not affected when the DSTC button on the center control panel is pressed.

4. Emergency Brake Assistance (EBA)
The EBA function is an integrated part of the DSTC system. EBA is designed to provide full brake effect immediately in the event of sudden, hard braking. The system is activated by the speed with which you depress the brake pedal.

When the EBA system is activated, the brake pedal will go down and pressure in the brake system immediately increases to the maximum level. Maintain full pressure on the brake pedal in order to utilize the system completely. EBA is automatically deactivated when the brake pedal is released.

When the car has been parked for some time, the brake pedal may sink more than usual when the engine is started. This is normal and the pedal will return to its usual position when it is released.

* Standard on all models except the T5 turbo.

** Standard on the T5 turbo, option on all other models.

pg. 21 STC/DSTC

The STC/DSTC button

The STC/DSTC button in the center control panel (see page 30) is used to switch the Spin Control (SC) function on or off.

NOTE: AYC (on models equipped with this function) will also be reduced, but not switched off, if SC is switched off.

The button must be pressed for at least a half second to prevent SC from being switched off inadvertently.

When the function has been switched off, the green indicator lamp in the button will go out and "SPIN CONTROL OFF" will be displayed in the text window.

All STC/DSTC functions are (re)activated each time the engine is started.

The Stability Control indicator light

The Stability Control indicator light will come on for approximately 2 seconds when the ignition is switched on as the system performs a self-diagnostic test.

The Stability Control indicator light will flash when:
- Traction Control is actively functioning to help avoid drive-wheel spin.
- Spin Control is actively functioning to help avoid loss of traction during acceleration.
- Active Yaw Control is actively functioning to help avoid skids or lateral slides.

The warning symbol in the instrument panel

A steady yellow glow indicates:
- That the system has been automatically disengaged due to a fault. "ANTI SKID SERVICE REQUIRED" be displayed in the text window. An authorized Volvo retailer should check the system.
- The system has been temporarily switched off due to high brake temperature. "TRACTION CONTROL TEMPORARILY OFF" will be displayed.

NOTE: The system will automatically switch on again when the brakes have cooled.

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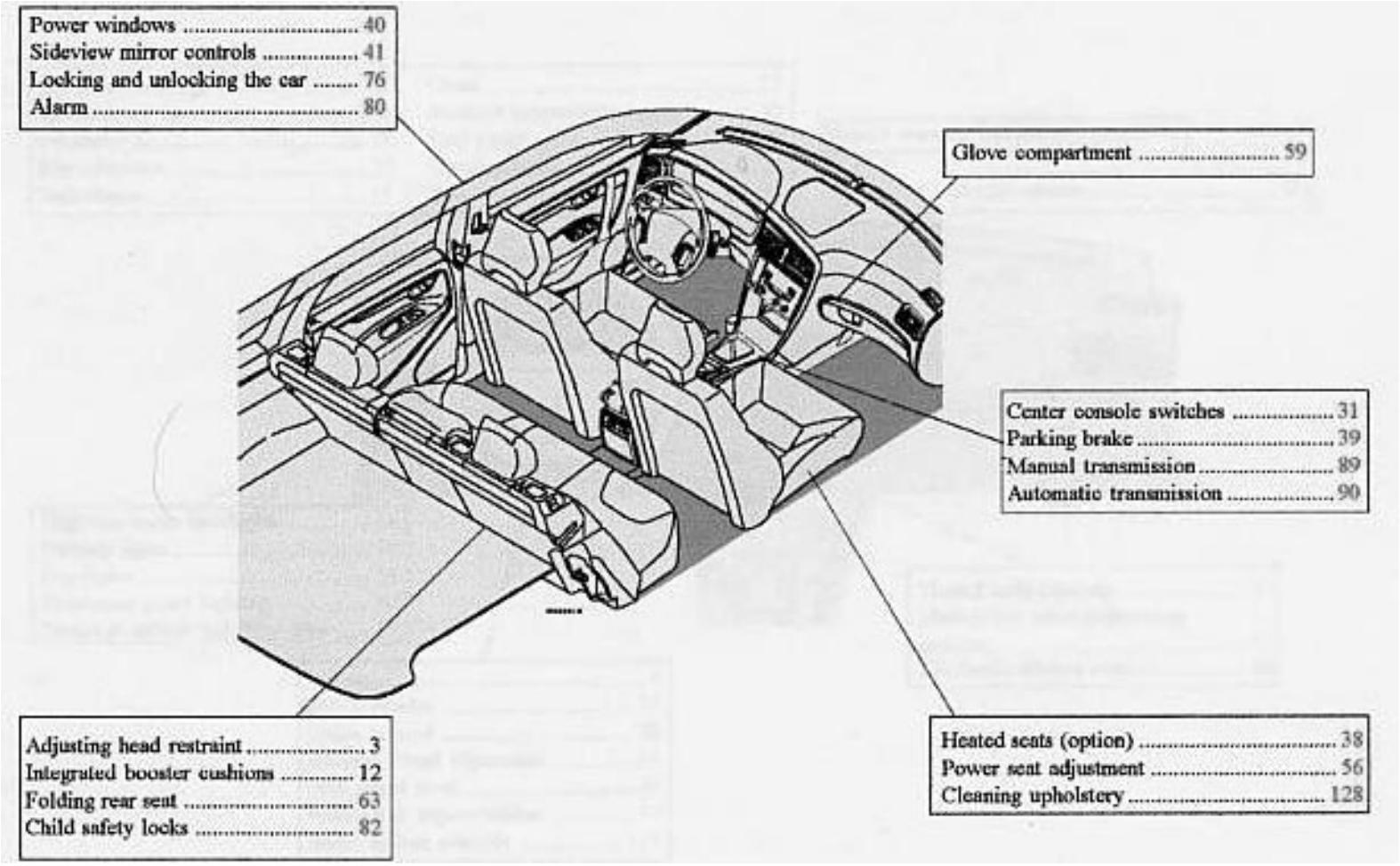
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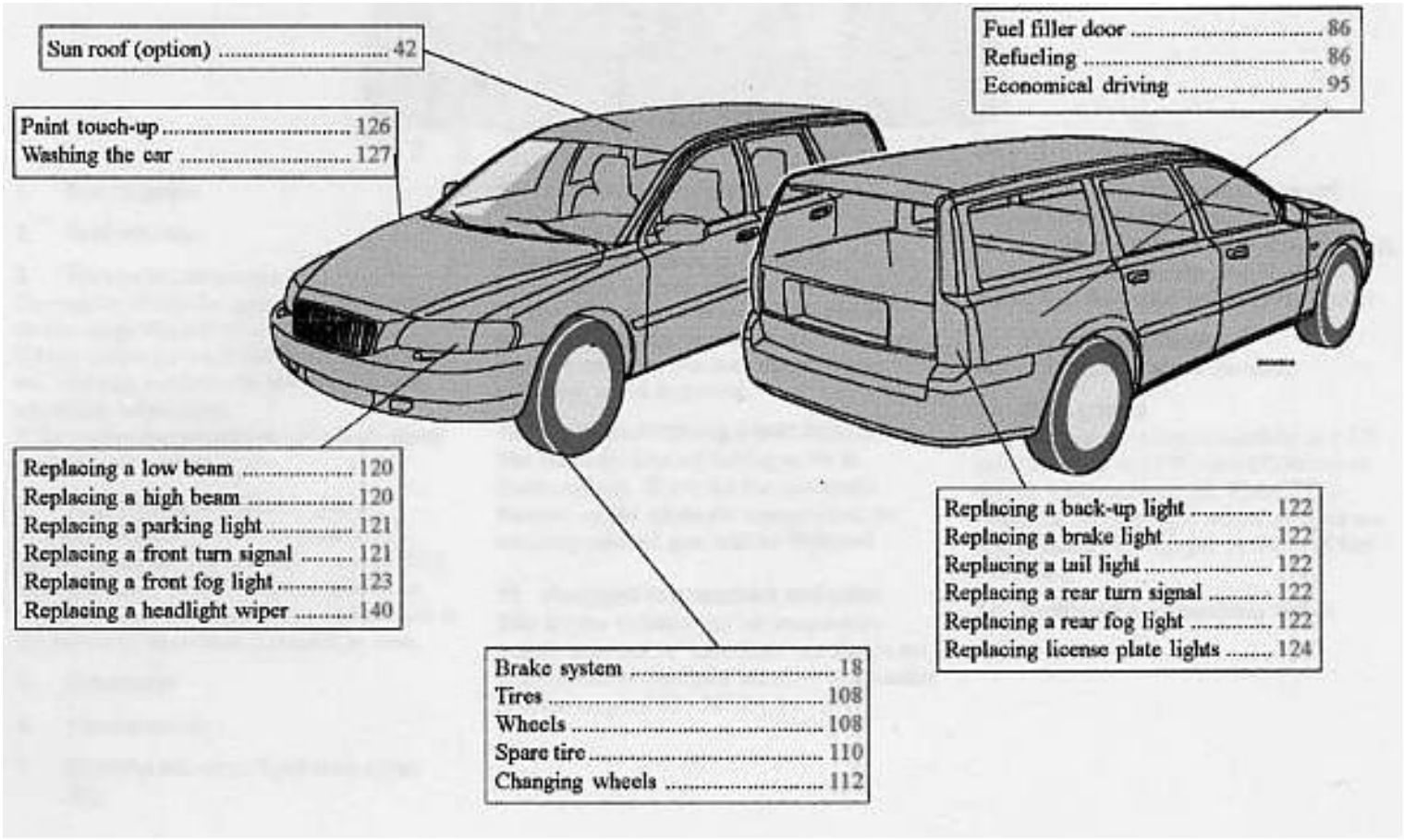
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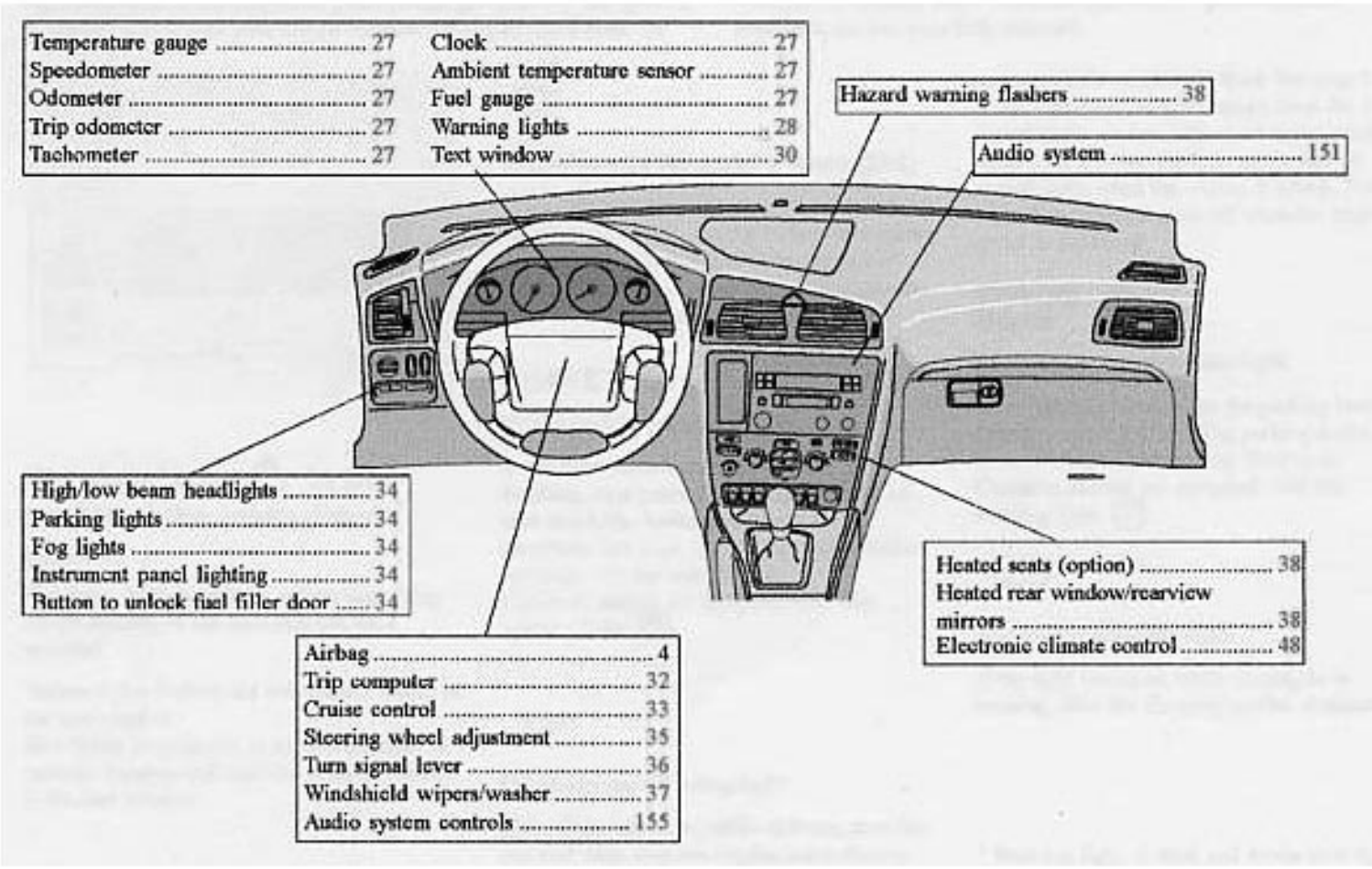
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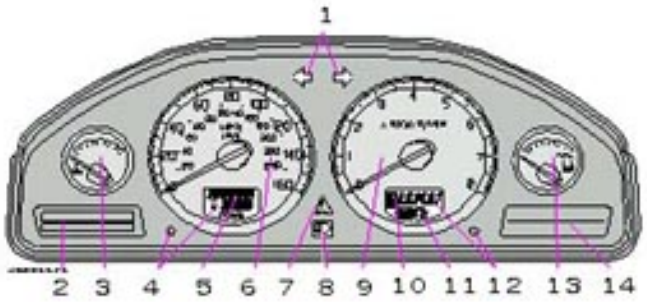
pg. 27 Instrument panel



1 Turn signals

2 Text window

3 Temperature gauge
The pointer should be approximately midway on the gauge when driving.

Do not drive the car if the warning light is on. The text window will provide you with additional

information.

If the engine temperature remains high, check coolant level - see page 131.

4 Trip odometer/reset button
The trip odometer is used for measuring shorter distances. The last digit indicates 1/10 mile/kilometer. Press the button quickly to toggle between trip odometers 1 and 2. Hold in the button for more than 2 seconds to reset.

5 Odometer

6 Speedometer

7 General warning light (see page 28).

8 High beam indicator light

9 Tachometer
Indicates engine speed in thousands of rpm. Do not drive for long with the needle in the red section. The engine has an built-in function preventing too high an engine speed. When this function operates, you may discern some pulsation, which is normal.

10 Gear and driving mode indicator The currently selected driving mode is displayed here. If you use the Geartronic function on the automatic transmission, the currently selected gear will be displayed.

11 Ambient temperature indicator
This display indicates the air temperature outside your car. A "snowflake" symbol in the text window is displayed when the temperature is in the range of 23 - 36° F (-5 - +2° C).

Please note that this symbol does not indicate a fault with your car.

At low speeds or when the car is not moving, the temperature readings may be slightly higher than the actual ambient temperature.

12 Clock/reset button
Turn the button to adjust the clock.

13 Fuel gauge
The fuel tank holds approximately 18.5 US gals (70 liters) or 19 US gals (72 liters) on models equipped with All Wheel Drive.

When the warning light comes on there are approximately 1.8 US gal. (8 liters) of fuel remaining.

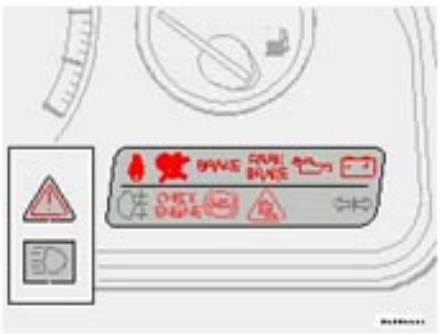
14 Indicator and warning lights

pg. 28 Indicator and warning lights

The indicator and warning lights described on pages 28 and 29 should never stay on when driving*

When the ignition key is turned, all of the warning lights in the lower right-hand side of the instrument panel should go on to test the function of the bulbs. If a light does not go off after the engine has started, the system indicated should be inspected.

NOTE: The parking brake reminder light will not go off until the parking brake has been fully released.



Warning lamp ⚠ in the center of the instrument panel

This lamp lights up **red** or **yellow** depending on the severity of the fault that has been detected.

Yellow light: Follow the instructions shown in the text window.

Red light: Stop the car as soon as possible in a suitable location and read the message shown in the text window.

Supplemental Restraint System (SRS)

If the light comes on (or stays on after the vehicle has started), the SRS diagnostic system has detected a fault. Drive to an authorized Volvo retailer for an inspection of the system. See the SRS section for more information.

BRAKE

Brake failure warning light

If the light comes on while driving or braking, stop immediately, open the hood and check the brake fluid level in the reservoir. See page 134 for reservoir position and page 137 for instructions.

Canadian models are equipped with this warning light:

Oil pressure warning light

If the light comes on while driving, stop the car and then stop the engine immediately and check the engine oil level. See page 135. If the light stays on after restart, have the car towed to the nearest authorized Volvo retailer. After hard driving, the light may come on occasionally when the engine is idling. This is normal, provided it goes off when the engine speed is increased.

Parking
Brake

Parking brake reminder light

This light will be on when the parking brake (hand brake) is applied. The parking brake lever is situated between the front seats.

Canadian models are equipped with this warning light:

Generator warning light

If the light comes on while the engine is running, have the charging system checked.

* Rear fog light, if used, and trailer turn signal, if towing a trailer, will go on while driving.

pg. 29 Indicator and warning lights

Rear fog light

This light indicates that the rear fog light is on.

Malfunction indicator lamp

On-Board Diagnostic II (OBDII): As you drive, a computer called "OBDII" monitors your car's engine, transmission, electrical and emission systems. The CHECK ENGINE light will light up if the computer senses a condition that potentially may need correcting. When this happens, please have your car checked by a Volvo retailer as soon as possible.

A CHECK ENGINE light may have many causes. Sometimes, you may not notice a change in your car's behavior. Even so, an uncorrected condition could hurt fuel economy, emission cleanliness, and driveability. Extended driving without correcting the cause could even damage other components in your car.

Canadian models are equipped with this warning light:

NOTE: If the fuel filler cap is not closed tightly or if the engine is running when the car is refueled, the Malfunction Indicator Lamp may indicate a fault. However, your vehicle's performance will not be affected. Use only Volvo original or approved fuel filler caps.

Anti-lock Brake System ABS

If the warning light comes on, there is a malfunction of the ABS system (the standard braking system will still function). The vehicle should be driven to a Volvo retailer for inspection. See page 19 for additional information.

Stability Traction Control (STC) system (option), or Dynamic Stability and Traction Control (DSTC) system (option)

An indicator light will flash when STC or DSTC is actively working to stabilize the car. See pages 20-21 for more detailed information.

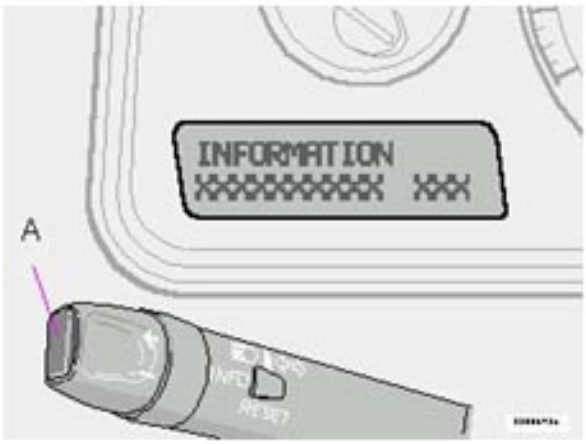
Turn signal indicator - trailer (certain models)

If you are towing a trailer, this light will flash simultaneously with the turn signals on the trailer. If the light does not flash when signaling, neither the trailer's turn signals nor the car's turn signals are functioning.

Seat belt reminder

This symbol lights up to indicate that the driver has not fastened his/her seat belt.

pg. 30 Text information window



Messages in the text window

When a warning light in the instrument panel comes on, a message is also displayed in the text window. After you have read the message, you can erase it by pressing button A (see illustration above).

NOTE: Certain messages cannot be erased until the condition has been corrected.

Warning messages override text messages from any car feature that also uses the text window. A warning message must be acknowledged (erased) before you can access the feature of your choice. Press button A to erase the warning message.

Erased messages are stored in the system's memory until the required action has been taken. You can scroll through the stored messages by pressing button A. The text window can be cleared (the message will be returned to memory) by pressing button A again.

General messages

STOP SAFELY: Stop and switch off the engine - to help prevent serious risk of damage.

STOP ENGINE: Stop and switch off the engine - to help prevent serious risk of damage.

SERVICE URGENT: Take your car to an authorized Volvo retailer for inspection as soon as possible.

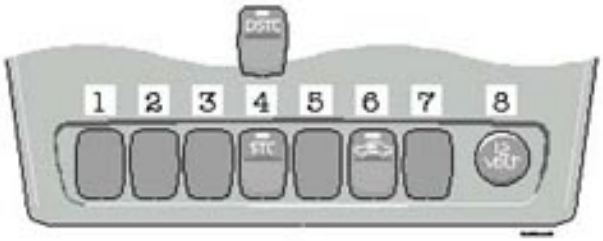
SEE MANUAL: Refer to your owner's manual. For additional information, please contact your Volvo retailer.

SERVICE REQUIRED: Take your car to an authorized Volvo retailer for inspection at your convenience (but preferably before the next scheduled maintenance service).

FIX NEXT SERVICE: Have the system affected inspected at the next scheduled maintenance service.

TIME FOR REGULAR SERVICE: This light will come on at 7,500 mile (12,000 km) intervals, after 750 hours of driving or after 12 months, whichever occurs first, to remind the driver that the service interval has been exceeded. The light will stay on for 2 minutes after start until reset by the servicing retailer.

pg. 31 Switches in the center console



The positions of these buttons may vary, depending on the specifications of your car

1. Not in use

2. Not in use

3. Not in use

4. Stability Traction Control (STC)*/Dynamic Stability Traction Control (DSTC)**
Press this switch for at least half a second to turn the Spin Control (SC) function of the STC/DSTC system on or off. An LED in the switch will light up to indicate that the system is on. See pages 20-21 for more information on STC/DSTC. The SC function should be switched off if you, for any reason, temporarily have to drive with tires of different dimensions (e.g., spare tire).

To help reduce the risk that the SC function is turned off inadvertently, the switch must be held in for at least half a second to disable this function. " STC/DSTC SPIN CONTROL OFF" will be displayed in the text window.

WARNING!
Please be aware that the car's handling characteristics may be affected if the Spin Control function is switched off.

5. Not in use

6. This button is used to temporarily disconnect alarm sensors. See page 79 for further information.

7. Not in use

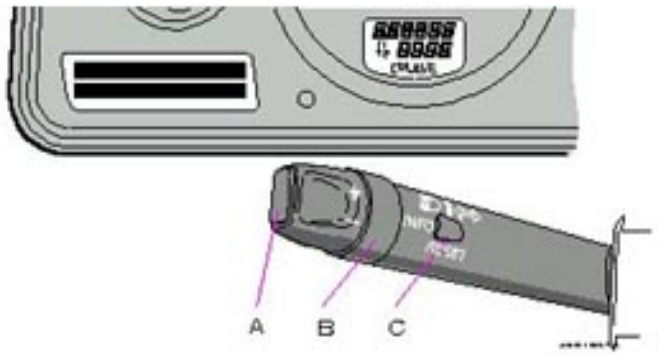
8. Auxiliary socket
This 12 volt socket can be used to plug in certain accessories such as cellular telephones, etc. The ignition key must be in position 1 (or higher) for the auxiliary socket to function.

NOTE: The auxiliary sockets can also be used for cigarette lighters, which are available at your Volvo retailer.

* Standard on all models except the T5 turbo.

** Standard on the T5 turbo, optional on all other models.

pg. 32 Trip computer (option)



Trip computer

The trip computer stores information gathered from several systems in your car and has four menus that can be displayed in the text window.

- Driving distance on current fuel reserve
- Average fuel consumption
- Current fuel consumption
- Average speed
- Current speed in mph (Canadian models only)

NOTE: Warning messages from the car's monitoring systems will override the trip computer function. If a warning message is displayed in the text window while you are using the trip computer, you must acknowledge the message by pressing button A. Press button A again to return to the trip computer function.

Trip computer controls and functions

The four* trip computer functions can be accessed by twisting control B one step at a time in either direction. Twisting a fifth time** returns you to the original function.
The trip computer can be reset (current data will be erased from system memory) by pressing RESET (button C).

1. Driving distance on current fuel reserve
This function shows the approximate distance that can be driven on the fuel remaining in the tank. This calculation is based on average fuel consumption during the last 12 miles (20 km) of driving and the amount of fuel remaining in the tank when the reading was taken. When the driving distance on current fuel reserve is less than 12 miles (20 km), "----" will be displayed in the text window.

2. Average fuel consumption
This value indicates fuel consumption since the last time the trip computer was reset (by pressing RESET, button C). When the engine is switched off, information on fuel consumption is stored and remains in system memory until the RESET (button C) is pressed again.

3. Current fuel consumption
This value indicates the current fuel consumption, based on readings taken once per second. When the car is not moving, "----" will be displayed.

4. Average speed
This value indicates average speed since the last time the trip computer was reset (by pressing RESET, button C). When the engine is switched off, information on average speed is stored and remains in system memory until the RESET (button C) is pressed again.

5. Current speed in miles per hour (Canadian models only)
This function provides the driver with an instantaneous conversion of the car's current speed from km/h to mph.

*Five functions on Canadian models
**A sixth time on Canadian models

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pg. 33 Cruise control

Cruise control

The cruise control panel is located on the left side of the steering wheel hub.

Engaging cruise control/setting speed

- Press the CRUISE button
- Press + or - to set the current speed
- Increase or decrease speed as desired

NOTE: Cruise control will not function at speeds below 22 mph (35 km/h).

Braking

Cruise control is automatically disengaged when the brake pedal is depressed. The currently set speed is stored in memory. Quickly pressing resume ( ) will return the car to the previously set speed.

Acceleration

Momentary acceleration, such as when passing another car, does not affect cruise control operation. The car will automatically return to the previously set speed when you release the accelerator pedal.

When the cruise control is already engaged, the car's speed can be increased or decreased by holding down + or - until the car reaches the desired speed. One short press on either symbol corresponds to a speed change of approximately 1 mph (1.6 km/h).

Disengaging cruise control

Cruise control can be disengaged by:
- Pressing the CRUISE button.
- Putting the gear selector in (N)eutral.

NOTE: Cruise control is automatically disengaged if the engine is switched off, if the gear selector is placed in (N)eutral, if the car's speed drops to under 70% of the currently set speed or if the wheels start to spin.

Temporarily disengaging cruise control

- Press 0 to temporarily disengage cruise control. Press "resume" ( ) to return to the previously set speed.
- Press the brake pedal. Press "resume" ( ) to return to the previously set speed.

WARNING!
Cruise control should not be used in heavy traffic or when driving on wet or slippery roads. Cruise control may not maintain set speed on steep downgrades.

pg. 34 Light switch panel

A - Headlights, parking lights

O All lights off

Models with daytime running lights: Low beam headlights will automatically come on if the ignition key is in position II. Front and rear parking lights and license plate lights will also be on.

Volvo recommends the use of daytime running lights. If, however, you would prefer to have these lights turned off (USA only), please consult your Volvo retailer. Please note that the use of daytime running lights is mandatory in Canada.

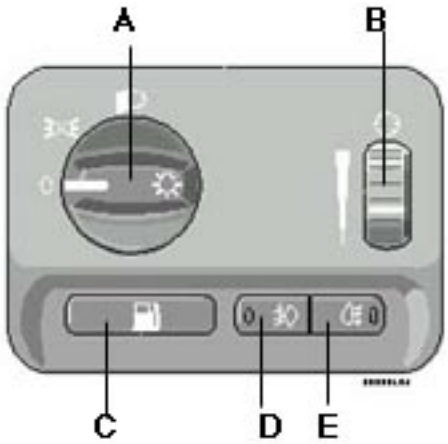
Parking lights on

Headlights, parking lights, license plate lights and instrument panel illumination are on if the

ignition key is in position II. If the headlight switch is in position all lights will go out when the ignition is switched off.

The headlight switch must be in this position before the high beams will function.

Switch from high to low beams and vice versa by pulling the turn signal switch lever on the left side of steering column toward you.



B - Instrument illumination

Move the thumbwheel up to increase brightness or down to decrease brightness. There is also an instrument panel illumination sensor (see illustration on page 48) which automatically adjusts the level of illumination.

C -Unlocking the fuel filler door

Press this button when the car is at a standstill to unlock the fuel filler door. Please note that the fuel filler door will remain unlocked until the car begins to move forward. An audible click will be heard when the fuel filler door relocks.
See also page 86.

NOTE: If the fuel filler door does not unlock after the button has been pressed, drive the car at a speed of at least 5 mph (8 km/h), stop the car, and press the button again.

D - Front fog lights (option)

The front fog lights will function only in combination with the low beam headlights.
An LED in the switch indicates when the front fog lights are on.

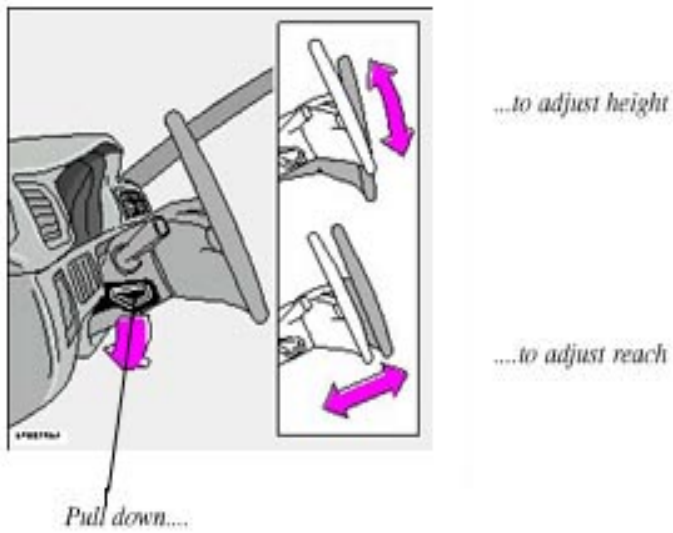
E - Rear fog light

The rear fog light is considerably brighter than the normal tail lights and should be used only when conditions such as fog, rain, snow, smoke or dust reduce visibility for other vehicles to less than 500 ft (150 meters).
An LED in the switch indicates when the rear fog light is on.
The rear fog light will only function in combination with the high/low beam head-lights.
By design, there is one rear fog light only, located in the driver's side tail light cluster.

Rear fog light in the instrument panel

This light indicates that the rear fog light is on.

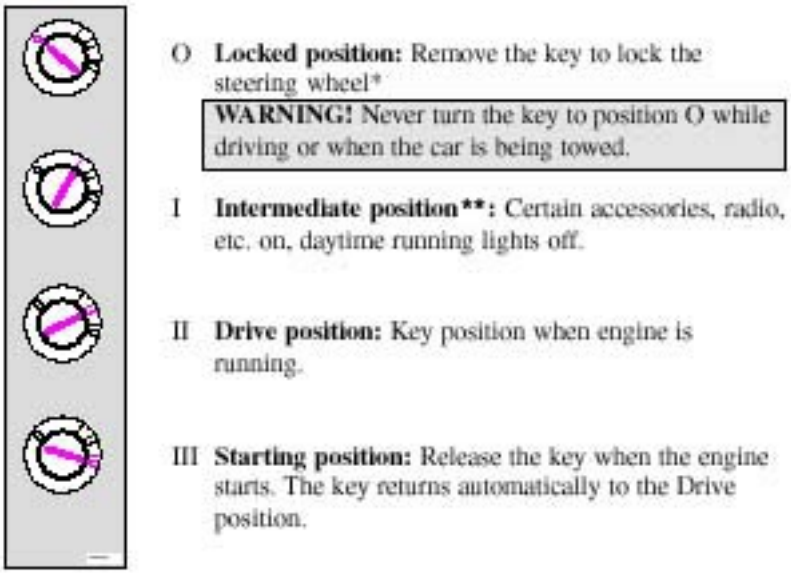
pg. 35 Steering wheel adjustment, Ignition switch/steering wheel lock



Steering wheel adjustment

Both the height and the reach of the steering wheel can be adjusted to a comfortable position for the driver. Pull down the lever on the left of the steering column. Adjust the steering wheel to a suitable position and press the lever back into place to lock the steering wheel in the new position. Check that the steering wheel is locked in the new position.

WARNING!
Never adjust the steering wheel while driving.


O Locked position: Remove the key to lock the steering wheel*
WARNING! Never turn the key to position O while driving or when the car is being towed.
I Intermediate position**: Certain accessories, radio, etc. on, daytime running lights off.
II Drive position: Key position when engine is running.
III Starting position: Release the key when the engine starts. The key returns automatically to the Drive position.

A chime will sound if the key is left in the ignition and the driver's door is opened.

* The gear selector must be in the (P)ark position.

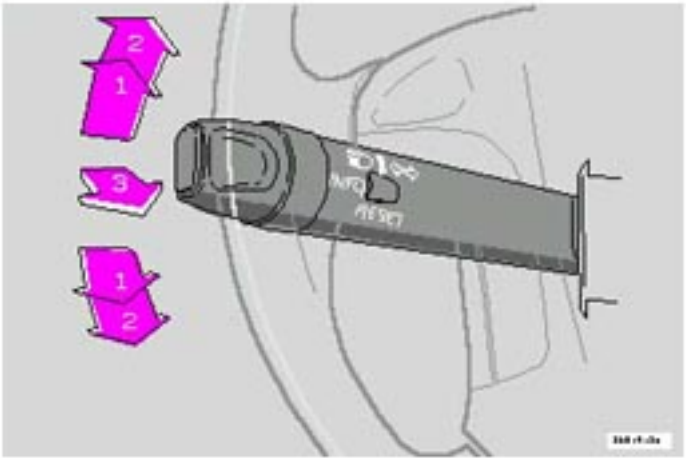
** Please be aware that leaving the key in this position will increase battery drain.

Steering wheel lock

The steering wheel lock might be under tension when the car is parked. Turn the steering wheel slightly to free the ignition key.
In order to help reduce car theft, make sure the steering wheel lock is engaged before leaving the car.

WARNING!
Never switch off the ignition (turn the ignition key to position 0) or remove the key from the ignition switch while the car is in motion. This could cause the steering wheel to lock, which would make the car impossible to steer.

pg. 36 Turn signals



Turn signals

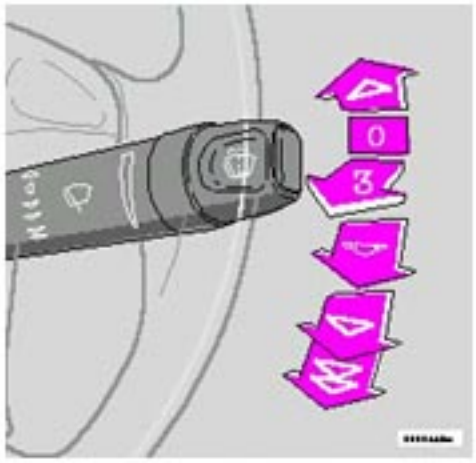
1 Lane change position. In maneuvers such as lane changing, the driver can flash the turn signals by moving the turn signal lever to the first stop and holding it there. The lever will return to the neutral position when released.

2 Signal lever engaged for normal turns.
3 High beam/low beam switch (headlights on).
Move the lever towards the steering wheel and release it.

Headlight flasher (headlights off).
Move the lever towards the steering wheel. The headlight high beam will be on until the lever is released.

NOTE: If the turn signal indicator flashes faster than normal, check for a burned-out turn signal bulb.

pg. 37 Windshield/tailgate wipers/washers



Windshield wiper/washer

Windshield wipers/washers

0 Windshield wipers off

Intermittent wiper function. With the lever in this position, you can set the wiper interval by twisting control A upward to increase wiper speed or downward to decrease the speed.

Rain sensor (option)
The rain sensor replaces the intermittent wiper function and automatically regulates wiper speed according to the amount of water on the windshield. The **sensitivity** of the sensor can be adjusted by twisting control **A** upward or downward.

Activating the rain sensor function:
1. Switch on the ignition.
2. Move the windshield wiper lever to the intermittent position.

The rain sensor is deactivated when the ignition is switched completely off.
To reactivate the rain sensor function:
1. Switch on the ignition.
2. Move the windshield wiper lever to position 0 and then back to the intermittent position.

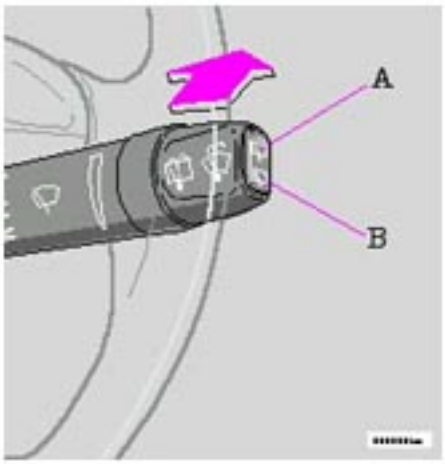
CAUTION: When washing the car in an automatic carwash, etc move the windshield wiper lever to position 0 or switch off the ignition completely to deactivate the rain sensor. If the sensor function is left on, the wipers will start inadvertently in the carwash and could be damaged.

Normal wiper speed

High wiper speed

3 Windshield wiper/washer, headlight wiper/washer (certain models). Pull the lever toward you and release. The wipers will make 2-3 sweeps across the windshield and headlights (certain models) after the lever is released.

"Single sweep" position: Move the lever slightly upward from the 0 position for one sweep of the wipers. The lever returns automatically to 0 when released.



Tailgate wiper/washer

Tailgate washer/wiper

A - Intermittent wiping

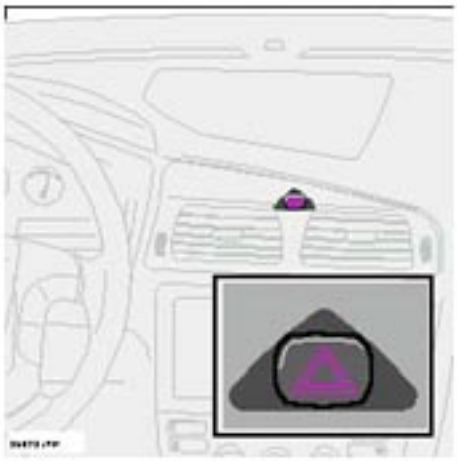
B - normal wiping
To operate the tailgate washer: Move the lever **forward** to start the tailgate washer.

Tailgate wiper and reverse gear

If the front wipers are on and the car is put into reverse gear, then the tailgate wiper will go into intermittent wiping function*. If the tailgate wiper is already in normal wiping function, the normal wiping function will continue.

* Consult your Volvo retailer if you would like to have this function deactivated.

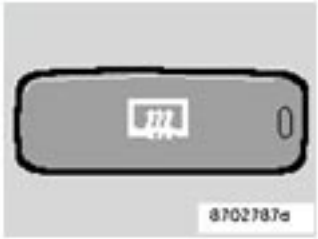
pg. 38 Warning flashers, Heated mirrors/rear window, Heated front seats

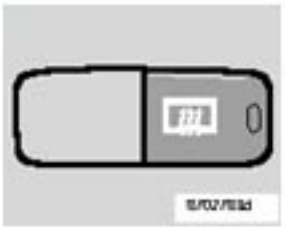


Hazard warning flashers

The four-way flasher should be used to indicate that the vehicle has become a traffic hazard. To activate the flashers, press the triangular button in the center dash. Press the button again to turn off the flashers.

NOTE: Regulations regarding the use of the hazard warning flasher may vary, depending on where you live.

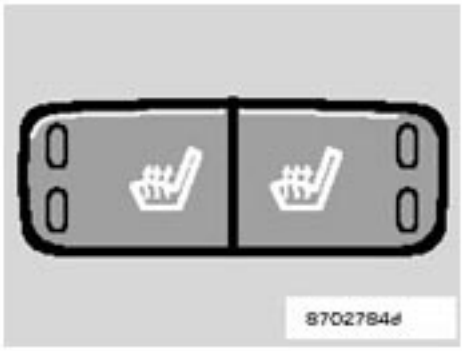




Heated sideview mirrors/rear window

Press the switch to start heating the rear window and sideview mirrors to remove ice or condensation. An LED in the switch will light up.

A timer automatically switches off the heating to the sideview mirrors after approximately 6 minutes and to the rear window after approximately 12 minutes. The LED will go out correspondingly.



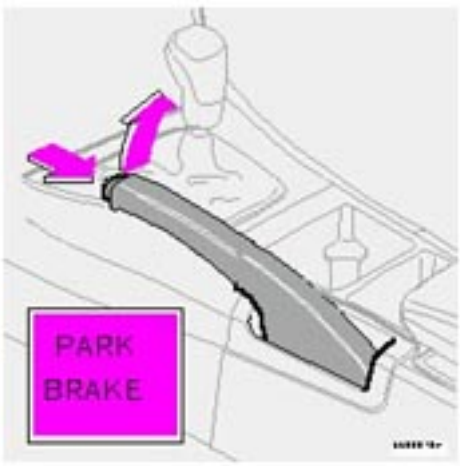
Heated front seats (option)

The front seat heating can be switched on and off as required.

- Press the switch once for maximum seat heating. Both LEDs in the switch will be lit.
- Press the switch a second time for comfort heating. One LED in the switch will be lit.
- Press the switch a third time to turn the heating off completely.

The seat heating for the passenger seat should be switched off when the seat is not occupied.

pg. 39 Parking brake, Auxiliary socket, Ashtrays



Parking brake (hand brake)

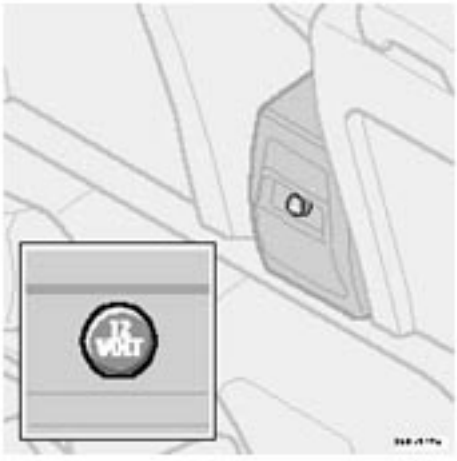
The lever is situated between the front seats. The brake is applied to the rear wheels. The indicator light in the instrument panel will light up to indicate when the parking brake is applied. Apply the parking

brake by pulling up firmly on the lever. Release the parking brake by depressing the button at the end of the lever and lowering the lever completely.

Front auxiliary socket

WARNING!

- Always use the parking brake (hand brake) when parking. On hills, also turn the front wheels toward the curb.
- The indicator light in the instrument panel will light up even if the parking brake is applied only slightly. Be sure to pull the lever up sufficiently.



Rear auxiliary socket

Auxiliary sockets

These 12 volt sockets can be used to plug in certain accessories such as cellular telephones, etc. The key must be in position I (or higher) for the auxiliary socket to function.

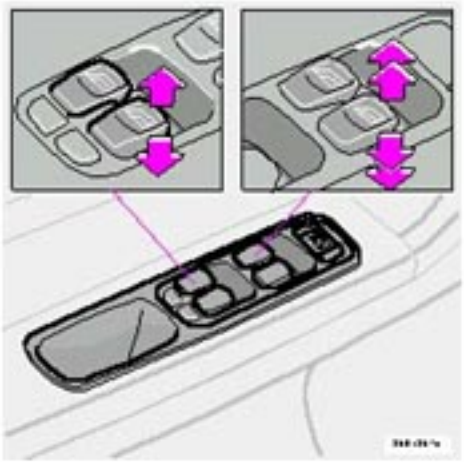
The auxiliary sockets can also be used for cigarette lighters, which are available at your Volvo retailer.

NOTE: The cover should be kept on when the auxiliary socket is not in use.

Ashtrays

Volvo cars in North America do not have an ashtray in the front seat as standard equipment. If you want to have an ashtray in the front seat, please contact your Volvo retailer.

pg. 40 Electrically operated windows



Electrically operated windows

The electrically operated windows are controlled by buttons in the arm rests. The ignition switch must be ON * (ignition key in position I, II or the engine running) for the electrically operated windows to function.

To lower: Press down the front edge of the button to the first detent ("stop").

To raise: Lightly pull up the front edge of the button to the first detent ("stop").

* The electrically operated windows will also function after the ignition has been switched off **as long as neither of the front doors has been opened.**

Auto up/down function (front doors only):

Either front door window can be opened or closed automatically.

Auto down: Press the front part of the button as far down as possible and release it immediately. To stop the window at any time, pull the button up.

Auto up: Pull the front part of the button up as far as possible and release it immediately. To stop the window at any time, press the button down.

NOTE: The power windows in the front seat have an overload protecting circuit breaker which reverses movement of the power windows to their starting points, if they are obstructed in any way. Thereafter the windows will operate normally again.

WARNING!

- Always remove the ignition key when the vehicle is unattended.
- Make sure that childrens' hands are clear before raising the windows.
- Never leave children unattended in the car.

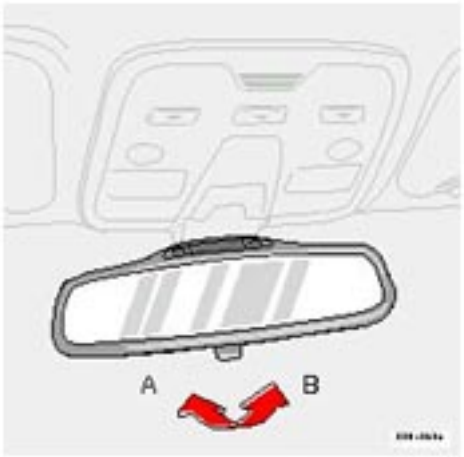
Cutout switch for rear windows

The electrically operated rear door windows can be disabled by a switch located on the driver's door (see illustration).

If the LED in the switch is OFF: The rear door windows can be raised or lowered with the buttons on the rear door armrests or with the buttons on the driver's door armrest.

If the LED in the switch is ON: The rear door windows can only be raised or lowered with the buttons on the driver's door armrest.

pg. 41 Rearview/sideview mirrors



Rearview mirror

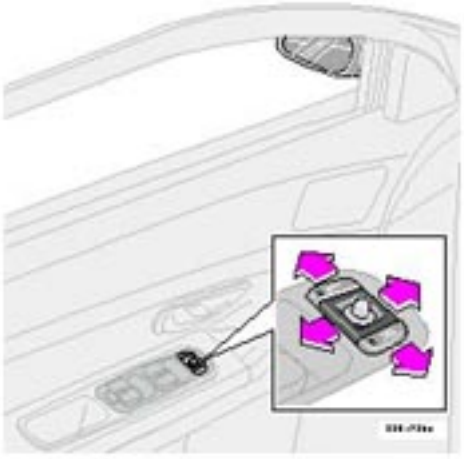
A Normal position

B Night position, reduces glare from following headlights

Autodim function (option)

The autodim function reacts to headlights from following traffic and automatically reduces glare.

NOTE: This function is automatically switched off when the gear selector is placed in the Reverse position.



Sideview mirror controls

Electrically operated sideview mirrors

The mirror control switches are located on the driver's door armrest.

Driver's side: Press the L switch (an LED in the switch will light up) to activate the adjustment control and then use this control to adjust the driver's door mirror.

Passenger's door: Press the R switch (an LED in the switch will light up) and then use the adjustment control to adjust the passenger's door mirror.

After you have adjusted the mirror(s), press the L or R switch again (the LED will go out) to deactivate the adjustment control.

Remote central locking and sideview mirror memory If you lock the car and later unlock it with the **same** remote control and open the driver's door, the sideview mirrors will automatically move to the position they were in when you left the car. This feature will work in the same way with all of the remote control transmitters (up to 3) that you use with your car.
This feature will not function if you lock your car with the key.

WARNING!
The mirrors should always be adjusted prior to driving. Objects seen in the wide-angle sideview mirror are closer than they appear to be.

pg. 42 Sun roof (option)

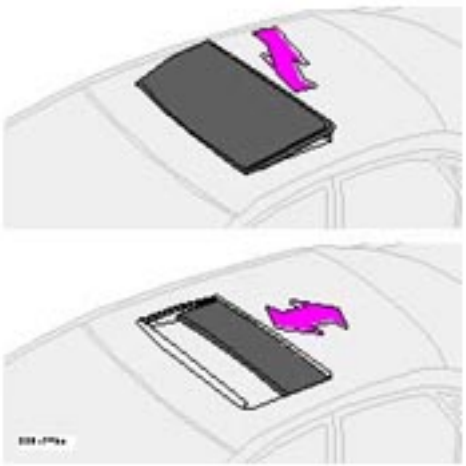
Sun roof switch

Electrically operated sun roof

To operate the sun roof, the ignition key must first be turned to the intermediate or drive position (position I or II).

- **To slide open the sun roof :** Pull the switch back to the first detent ("stop") and hold it until the sun roof has opened to the position you prefer. The sun roof will initially open to the "comfort" * position. Pull and hold the switch again to open the sun roof completely.
- **AUTO open:** Pull the switch as far back as possible and release it to automatically slide open the sun roof to the "comfort" * position. Pull the switch again to open the sun roof completely.

Ventilation position



Sliding sun roof

- **To close the sun roof:** Push the switch forward to the first detent ("stop") and hold it until the sun roof has closed completely.
- **AUTO close:**Push the switch forward as far as possible and release it to automatically close the sun

roof.

NOTE: If the sun roof is impeded during **AUTO close**, it will reverse direction, reopen and stop.

- **Ventilation position (opening the rear edge of the sun roof):** With the sun roof closed, push up the rear section of the switch.

To close, pull the front section of the switch straight down until the sun roof has closed completely.

WARNING!

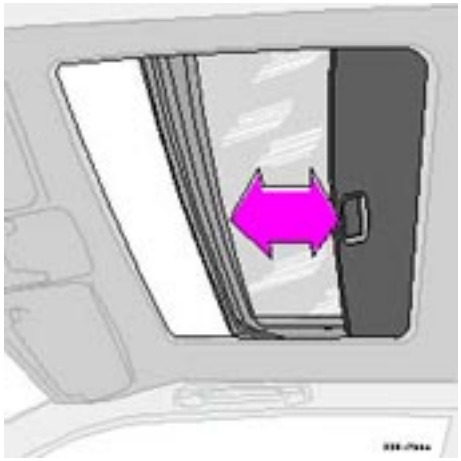
- Never open/close the sun roof if it is obstructed in any way when in operation.
- Never allow a child to operate the sun roof.
- Never extend any object or body part though the open sun roof, even if the vehicle's ignition on is completely switched off.
- Never leave a child alone in a vehicle.

CAUTION!

- Remove ice and snow before opening the sun roof.
- Do not operate the sun roof if it is frozen closed.
- Never place heavy objects on the sun roof.

* A position where the sun roof is not quite fully open which helps alleviate rumbling wind noise.

pg. 43 Sun visor



Sun visor

Sun visor:

The optional sun roof also features a sliding sun visor. The visor slides open automatically when the sun roof is opened. The visor must be closed manually.

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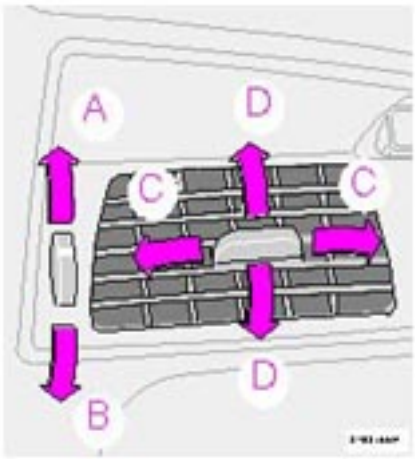
pg. 46 Ventilation



Air vents in dash

Air vents (dash)

A Open

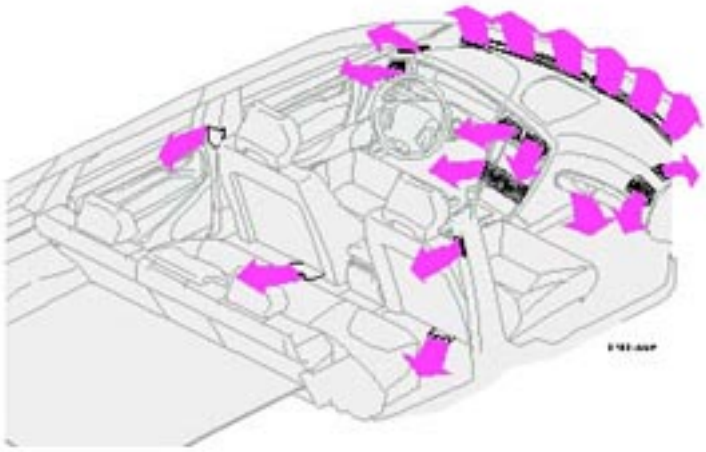
B Closed

C Horizontal air flow

D Vertical air flow

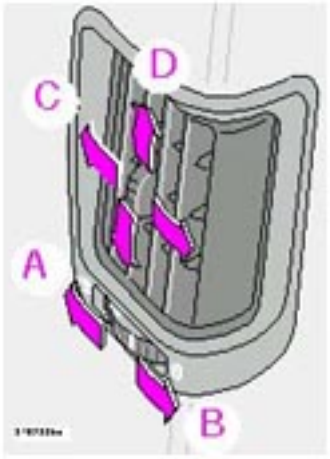
Direct the outer air vents toward the side windows to demist.

In cold weather, close the air vents in the center of the dash to direct as much air as possible toward the windows.



Air flow

The air that is drawn into the passenger compartment is distributed from 14 ventilation points.



Air vents in door pillars

Air vents in door pillars

A Open

B Closed

C Horizontal air flow

D Vertical air flow

Direct the air vents toward the rear side windows to demist.

Direct the air vents toward the rear seat for the best heating/cooling effect.

pg. 47 Climate control system - general information

Condensation on the inside of the windows

Keeping the insides of the windows clean will help reduce the amount of condensation that forms on the windows. Use a commercial window cleaning agent to clean the windows.

Ice and snow

Always keep the air intake grille at the base of the windshield free of snow.

Cabin air filter

Replace the cabin air filter with a new one at the recommended intervals. The filter should be replaced more often when driving under dirty and dusty conditions. The filter cannot be cleaned and therefore should always be replaced with a new one.

Sensors

The sunlight sensor on the dashboard and passenger compartment temperature sensor in the ECC control panel should not be covered in any way as this could cause incorrect information to be sent to the ECC system.

Parking the car in warm weather

If your car has been parked in the sun in warm weather, opening the windows and sun roof (option) for

several minutes before driving will help release the warm air from the passenger compartment. When the engine is running, close the windows and sun roof and use the recirculation function for several minutes to enable the air conditioning to cool the compartment as quickly as possible.

Windows and optional sun roof

The ECC system will function best if the windows and optional sun roof are closed. If you drive with the sun roof open, we recommend that you manually adjust the temperature and blower control (the LED in the AUTO switch should be off).

Acceleration

The air conditioning is momentarily disengaged during full-throttle acceleration.

ECC maintenance

All maintenance on the climate control systems should be carried out by an authorized Volvo service technician only.

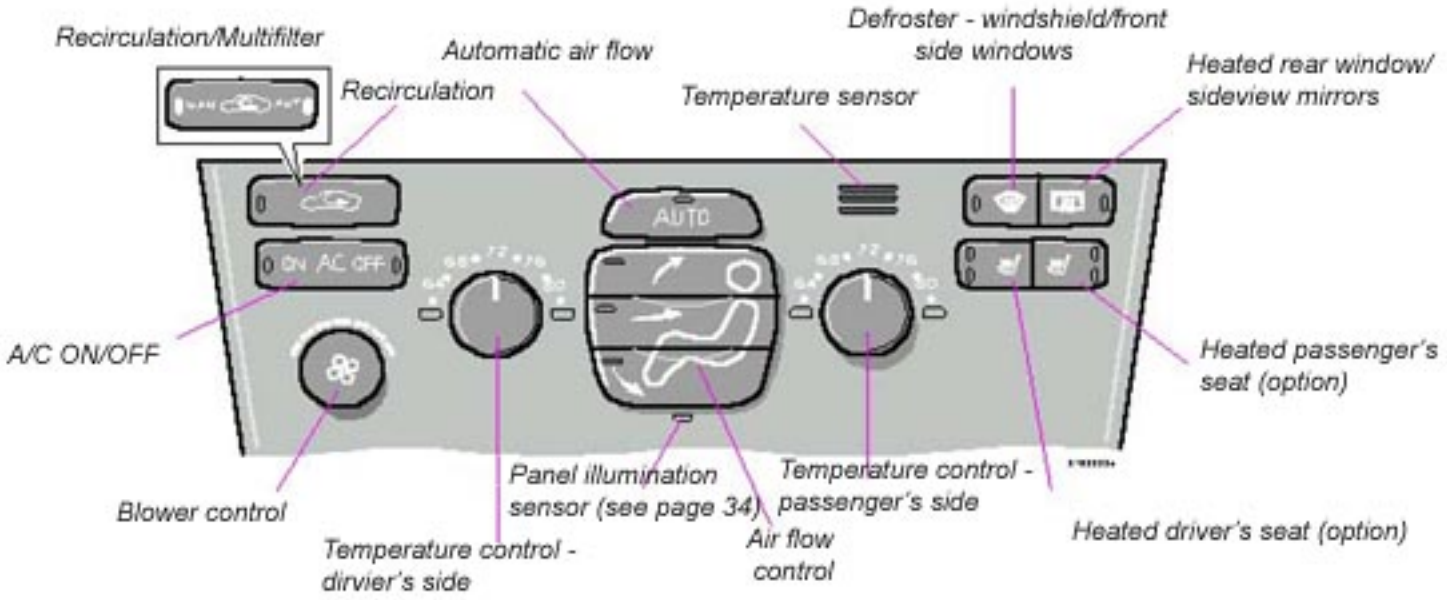
Refrigerant

Volvo cares about the environment. The air conditioning system in your car contains a CFC-free refrigerant - R134a. This substance will not deplete the ozone layer. The system contains 2.2 lbs (1000 g) R134a and uses PAG oil.

Passenger compartment blower

Approximately 50 minutes after the ignition is turned off, the blower may come on automatically, and run for five minutes, to remove condensation in the A/C evaporator.

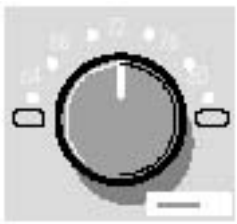
pg. 48 Electronic Climate Control (ECC)



pg. 49 Electronic Climate Control (ECC)

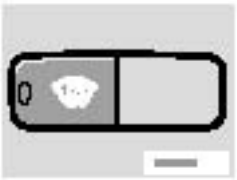
AUTO

This function automatically regulates the Electronic Climate Control system so that the selected temperatures are maintained. The blower, heating, air distribution (air flow) and air conditioning are controlled. If you prefer to manually set any of these functions, the remaining functions will still be controlled automatically. Pressing the AUTO button overrides any settings that were previously made manually.



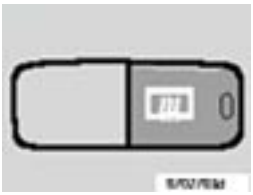
Temperature

These controls are used to individually set the temperature for both sides of the passenger compartment. Please note that the compartment will not be heated or cooled faster by setting the temperature higher or lower than necessary. Set the control to the temperature you prefer.



Defroster

This function demists/de-ices the windshield and front side windows. The LED in the switch will light up to indicate that the defrost function is engaged. Blower speed increases automatically and the air in the passenger compartment is dehumidified. Recirculation will not function while defrost is engaged.



Heated rear window/sideview mirrors

This function demists/de-ices the rear window and sideview mirrors. The LED in the switch will light up to indicate that the heating function is engaged. See page 38 for additional information on this function.

CAUTION:

Never use ice scrapers made of metal as they can easily scratch the mirror surface.

pg. 50 Electronic Climate Control (ECC) - manual settings

Recirculation (see also page 48)

Press this switch to engage the recirculation function (air in the passenger compartment recirculates - no fresh air enters the compartment). The LED in the switch will light up to indicate that the function is engaged.

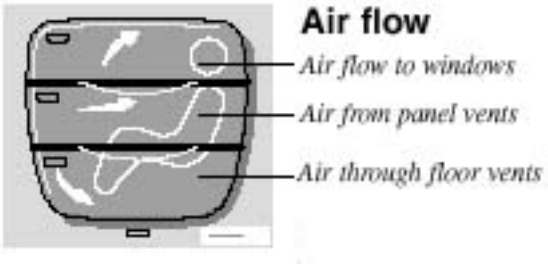
- Use this function if the outside air is contaminated with exhaust gases, smoke, etc or to heat/cool the car quickly.
- Recirculation should not be used for more than 15 minutes. *If your windows begin to fog or mist, make sure that the recirculation function is switched off.*
- Selecting Defroster automatically switches recirculation off.
- **Timer mode activation:** (Cars with Interior Air Quality system have no timer mode) Press and hold the recirculation button for at least 3 seconds to activate a recirculation timer mode. The amber LED in the recirculation button will flash 5 times to show that the timer mode is being activated. In the time mode, each time the recirculation button is pressed, the climate control system will recirculate the air in

the passenger compartment for 5 to 12 minutes, depending on the outside air and then revert back to fresh air.

- **Timer mode deactivation:** Press and hold the recirculation button for at least 3 seconds. The amber LED in the recirculation button will illuminate steadily for 5 seconds to show a return to "normal" mode.
- In normal mode, when the recirculation button is pressed, the climate control system will recirculate the air in the passenger compartment until the recirculation button is pressed again.
- **Timer mode memory:** If the car is turned off while timer mode is active, timer mode will still be active when the car is restarted.

Heated front seats (option)

Please see page 38 for more information on this function.



Press **AUTO** to automatically regulate air flow or press any combination of the controls shown in the illustration to manually adjust air flow. An LED in the switch will light up if an air flow control has been pressed.

Air conditioning ON/OFF

Press the switch to turn the air conditioning on or off. The "ON" or "OFF" LED will light up to indicate if the system is switched on or off. Other functions will still be regulated automatically (if the **AUTO** switch is on).

- The air conditioning functions only at temperatures above 32° F (0° C).
- While the **Defroster** function is selected, the air conditioning is temporarily activated to dehumidify the air, even if you have manually switched the air conditioning off. This will only function if the blower is not switched off.

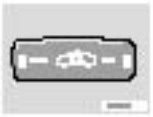
Blower control

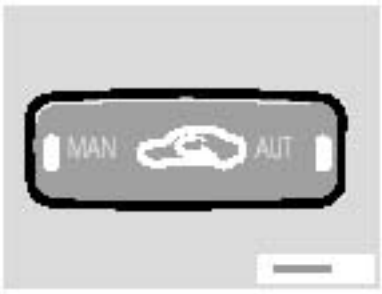
Turn the control clockwise to increase or counterclockwise to decrease the blower speed. Pressing the AUTO switch will automatically regulate blower speed and override manual adjustment.

NOTE: Turning the blower control counterclockwise as far as possible (an orange LED next to the control will light up) will turn both the blower and the air conditioning off.

pg. 51 Electronic Climate Control (ECC) with Interior Air Quality system (option)

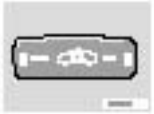
Interior Air Quality system (option)

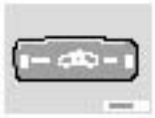
Some cars are equipped with a Multifilter and Air quality sensor. The filter separates gases and particles, thereby reducing the amounts of odors and contaminants entering the car. The Air quality sensor detects increased levels of contaminants in the outside air. When the Air quality sensor detects contaminated outside air, the air intake closes and the air inside the passenger compartment is recirculated, i.e. no outside air enters the car. The filter also cleans recirculated passenger compartment air. When the Air quality sensor is activated, the LED AUT comes on in 

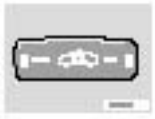


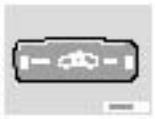
Operation:

Press to activate the Air quality sensor (normal setting).

Or select one of three functions by pressing  .

1. Press  : the LED AUT comes on. The Air quality sensor is now activated.

2. Press  : no LED is lighted. Recirculation not activated.

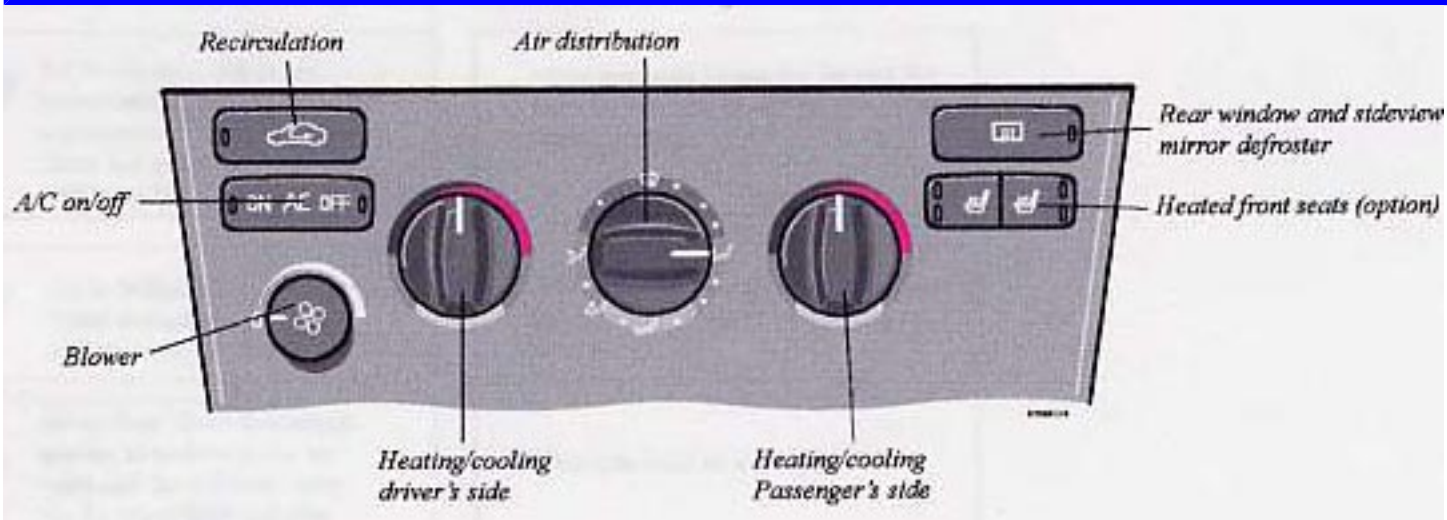
3. Press  : the LED MAN comes on. Recirculation is now activated.

You can switch between these three functions by repeatedly pressing

Keep the following in mind:

- Make it a rule to have the Air quality sensor activated at all times.
- Recirculation is limited in cold climates to avoid misting up.
- If misting occurs, you should deactivate the Air quality sensor.
- If the windows mist up, you can also use the windshield and side window defroster functions. See page 49.
- The filter should be changed at the intervals listed in the Warranty and Service Records Information booklet. However, if the car is used in a severely contaminated environment, it may be necessary to change the filter more frequently.

pg. 52 Manual climate control with air conditioning, A/C



pg. 53 Manual climate control with air conditioning, A/C

A/C - ON/OFF

The air conditioning function is engaged by pressing ON and disengaged by pressing OFF. When you select Defroster , the air conditioning is automatically engaged if the fan is not set to position 0.

Heated front seats (option)

Please see page 38 for more information on this function.

Heated rear window/sideview mirrors

This function demists/de-ices the rear window and sideview mirrors. The LED in the switch will light up to indicate that the heating function is engaged. See page 38 for additional information on this function.

CAUTION:

Never use ice scrapers made of metal as they can easily scratch the mirror surface.

Recirculation

Recirculation can be used to shut out stale air, exhaust, etc. from the passenger compartment. The air in the passenger compartment is then recirculated, i. e. no air from outside the car is taken into the car when this function is activated. Recirculation (together with the air conditioning system) cools the passenger compartment more quickly in warm weather.
If you allow the air in the car to recirculate, there is a risk of icing and fogging, especially in winter. The timer function minimizes the risk of ice, misting and stale air.
Activate the timer function as follows:

- Press for more that 3 seconds. the LED flashes for 5 seconds. the air recirculates in the car for 3-12 minutes depending on the outside temperature.
- The timer function is activated each time you press .

To switch off the timer function :

- Press again for more than 3 seconds. The LED lights for 5 seconds to confirm your selection.

Recirculation is always disconnected when you select Defroster .

Blower

Blower speed can be increases or decreased by turning the knob. If the knob is set to 0, the air conditioning function is automatically disengaged.

Temperature

Turn the control to set the temperature for the driver's and passenger's sides of the car. For cooler air, the air conditioning function must be engaged.

Air distribution

Use the air distribution control positions (marked with dots) between the different symbols to fine-tune air distribution for the maximum comfort.

pg. 54 Manual climate control with air conditioning, A/C

Air distribution

Air through front and rear air vents.	When you want good cooling in warm weather.
Air to windows. Air is not recirculated in this position. Air conditioning is always connected. There is a certain amount of airflow to the air vents.	When you want to remove ice and fog from the windshield. Set the blower to its highest setting!
Air to both floor and windows. There is a certain amount of airflow to the air vents.	When you want comfortable conditions and good demisting in cold weather!
Air to floor. There is a certain amount of airflow to the air vents and the defroster vents for the windshield and side windows.	When you want to warm your feet.
Air to floor and air vents.	In sunny weather with cool outside temperature.

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Chapter 4 - Interior

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Auxiliary seat in cargo area, Extra handgrip - XC70 73

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pg. 56 Front seats

Electrically operated front seats (option)

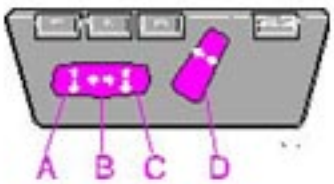
From the time the driver's door is unlocked, the driver's seat can be adjusted with the ignition off during a **10 minute period, if the door remains opened.** If the door is closed, the seat can be adjusted for 40 seconds.

1 - Power seat control panel

2 - Lumbar support
Turn the control for softer or firmer lumbar support.
Move the seat as far rearward as possible for easiest access to the lumbar support control.

Electrically operated seats with memory function (option)*

Power seat control panel

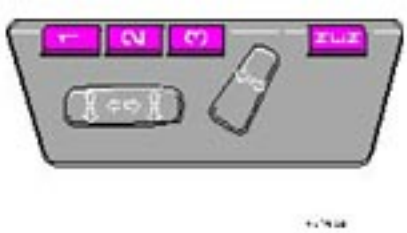


A Front edge of seat (raise/lower)
B Forward - rearward
C Rear edge of seat (raise/lower)
D Backrest tilt

WARNING!

- Because the driver's seat can be adjusted with the ignition off, children should never be left unattended in the car.
- Movement of the seat can be STOPPED at any time by pressing any button on the power seat control panel.
- Do not adjust the seat while driving. The seat should be adjusted so that the brake pedal can be depressed fully. In addition, position the seat as far rearward as comfort and control allow.
- The seat rails on the floor must not be obstructed in any way when the seat is in motion.

Programming the memory



Three seat positions can be programmed. To program a seat position:

1 Adjust the seat to the desired position.

2 Hold down the MEM button.

3 While holding down the MEM button, press button 1 to program the current position of the seat.

Buttons 2 and 3 can be programmed in the same way. To move the seat to a programmed position, press and hold down button 1, 2 or 3 until the seat moves to the preset position and stops.

As a safety precaution, the seat will stop automatically if the button is released before the seat has reached the programmed position.

NOTE: The seat has an overload protector which engages if an object blocks the movement of the seat. If this happens, remove the object and wait 20 seconds before operating the seat again.

* This option is only available on the driver's seat.

pg. 57 Front seats

Electrically operated seats - general information

Adjusting the front seats:

The passenger's seat can only be adjusted if the ignition key is in position I or II.

Driver's seat: The driver's seat can be adjusted if the ignition key is in position I or II (see page 35). However, it can also be adjusted:

- Within 40 seconds after the ignition has been switched off (even if the key has been removed from the ignition switch).
- Within 40 seconds after the driver's door has been unlocked with the key or remote control and opened. The key does not have to be in the ignition switch during this period.

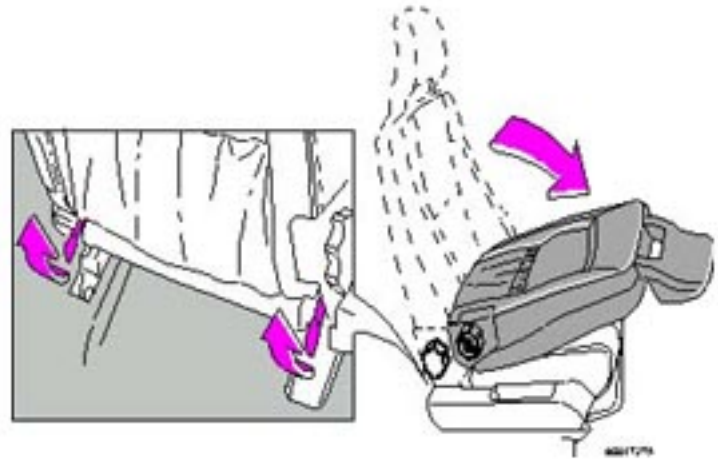
Remote keyless entry system and driver's seat

The remote control transmitter also controls the electrically operated driver's seat in the following way:

- Adjust the seat to your preferences.
- When you leave your car, lock it using the remote control.
- The next time you unlock the driver's door with the **same** remote control(the one you used to lock the doors with) and open the driver's door, the driver's seat will automatically move to the position in which you left it. The seat will move to this position even if someone else has adjusted it since you last unlocked the car with the same remote control.

NOTE:

- This feature will work in the same way with all of the remote control transmitters (up to 3) that you use with your car.
- This feature will not function if you lock your car with the key.



Folding front seat backrest

The passenger seat backrest can be folded down to the horizontal position for carrying long loads. To fold down the backrest:

- Move the seat as far rearward as possible
- Adjust the backrest tilt to the most upright position
- Lift the catches on the lower rear side of the backrest
- Without releasing the catches, push the backrest forward
- Move the seat as far forward as possible

WARNING!
Cover sharp edges on the load to help prevent injury to occupants. Secure the load to help prevent shifting during sudden stops.

pg. 58 Front seats

Manual height adjustment - front seat

The front edges of the driver and passenger seat cushions can be adjusted to seven different settings and the rear edges to nine different settings.
Lever (A) - adjusting the front edge of the seat.
Lever (B) - adjusting the rear edge of the seat.

Manual front-rear adjustment

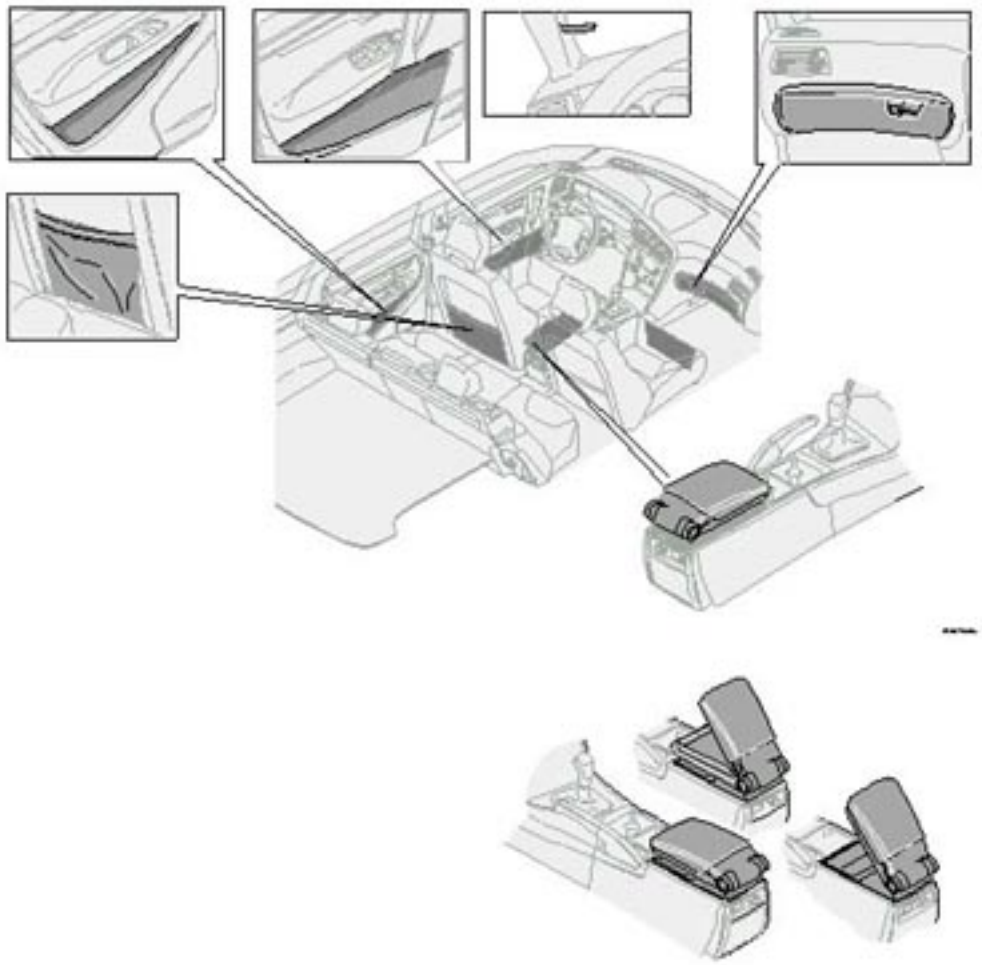
The seat can be moved forward or rearward by pulling up on the front-rear adjustment bar. Check that the seat is securely locked into position after adjusting.

WARNING!

Do not adjust the seat while driving. The seat should be adjusted so that the brake pedal can be depressed fully. In addition, position the seat as far rearward as comfort and control allow.

pg. 59 Storage compartments

Clip for toll booth tickets, etc.



WARNING!
Make sure that no hard, sharp or heavy objects lie on or in any of the storage places where they might cause injury during heavy braking.

Ashtray (option)

To empty the ashtrays:
Front seat, open the ashtray, pull out the insert. Rear seat, as above.

Cup holders

Some models are equipped with cup holders for the front and rear seat occupants. You can also use the center console's storage compartment for cassette tapes, CD's etc.

Coin compartment (option)

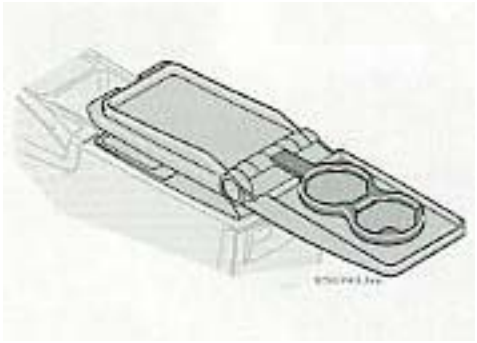
To remove the coin compartment: Press the middle of the compartment while pulling it straight up.

Storage compartment and armrest

Inside the armrest there is a storage compartment which you may use for different personal accessories.

The armrest's lid is twofold.
To open only the upper lid: press the locking mechanism underneath the upper lid and fold the lid backwards to desired position.
To open the upper and lower lid: lift the lid from underneath upwards and fold to desired position.

pg. 60 Cup holders, Glove compartment

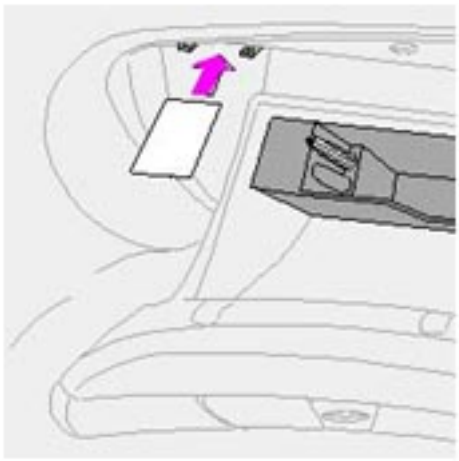


Cup holder in the center console for rear seat passengers (XC70 only)

This cup holder is only available on the XC70 with a 3-section rear seat.

- To use the cup holder, open the cover on the center console and fold it rearward. The cup holder and the cover open together.
- The cup holder and the cover can be closed separately.

NOTE: If the cup holder is subjected to weights above approximately 12 lbs (5 kg), it will fold down slightly to help prevent damage to the hinges.



Storage in the glove compartment

The glove compartment has storage spaces designed specifically to hold credit cards, pens, and pencils.

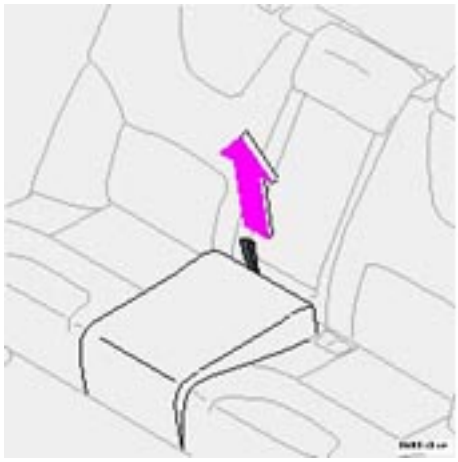
pg. 61 Storage compartments, front, Coat hanger

Pen holder on the center console

Coat hanger

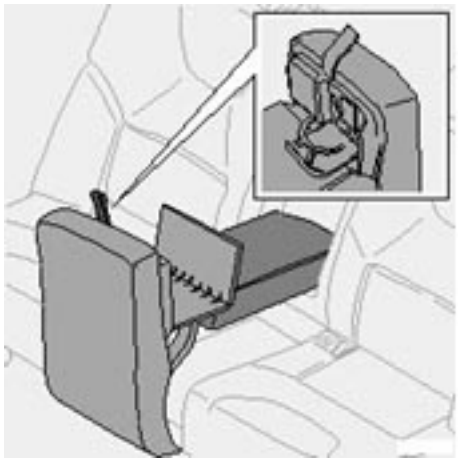
Use the coat hanger for clothes of normal weight.

pg. 62 Folding Table in rear seat

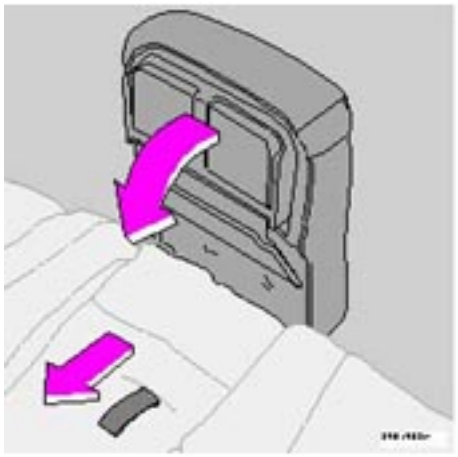


Folding Table (option)

Pull the tab and fold the table section forward.



Fold the armrest in the backrest forward. Fold out the table so that it rests on the armrest. Press to release the cup holder. You do not have to fold the backrest forward, if you only want to use the cup holder.



To close: Fold the table section upward into place. Fold the arm under the table inward being careful not to pinch your hand. Pull the handle and fold the table section back into place.

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pg. 63 Rear seat and cargo area

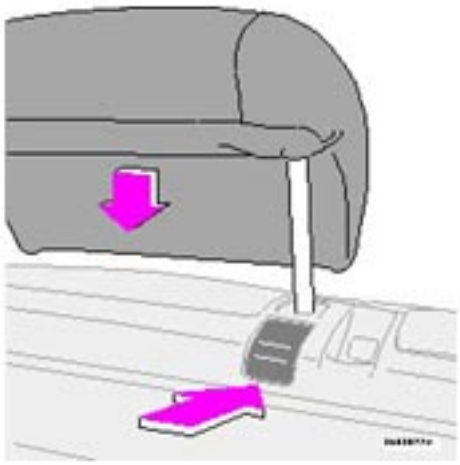
Folding down an outboard head restraint

Extension of cargo area

The rear seat is in two sections and each section can be folded forward separately.

Before the backrests are folded down:

- Adjust the front seat backrests into a more upright position if they are excessively reclined.
- Pull the rear seat cushion strap and pull the cushion forward against the front seat backrests.
- Fold down the outboard head restraint(s) by first pushing the restraint sideways toward the center of the car, and then pressing it downward.



Lowering the center head restraint

Center seat head restraint

Models with 2-section rear seat
Lower the center seat head restraint if it is raised. Press the release button behind the right-hand support. See illustration above.

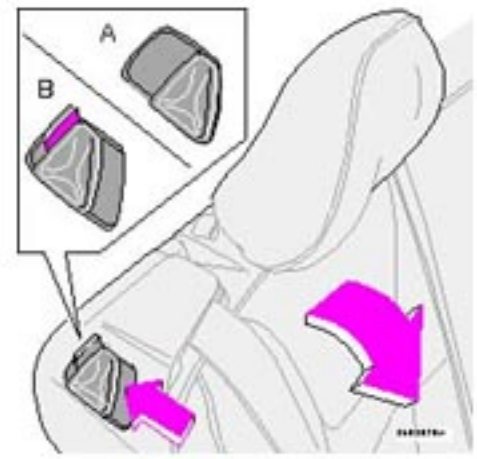
Folding the outboard backrests down

Models with 2 or 3-section rear seat

Press the backrest catch to the rear and tip the backrest forward. See the illustration in the right-hand column.

A - Catch in closed position.

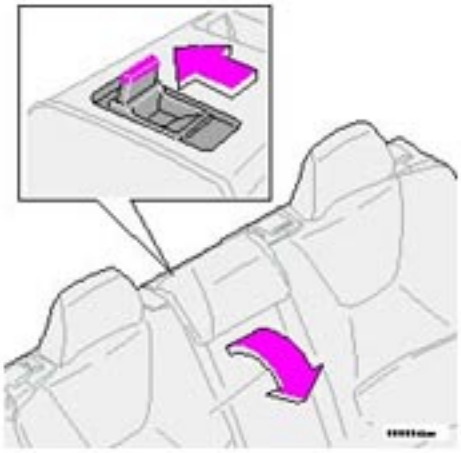
B - Catch in open position.



Tipping an outboard backrests forward

WARNING!
The **red lock indicator** is VISIBLE (B) when the backrest is NOT locked in position and not visible (A) when the backrest is correctly locked in place. When the backrest is in the upright position, it must always be correctly locked in place.
When the rear seat is folded down, do not place heavy objects against the backs of the front seats. This places a severe strain on the folded down backrest of the rear seat. Be sure to secure cargo. Cargo must not be stacked higher than the top of seatbacks. This will reduce the possibility of luggage, etc. becoming projectiles during sudden maneuvers, rapid braking or an accident.

pg. 64 Rear seat and cargo area

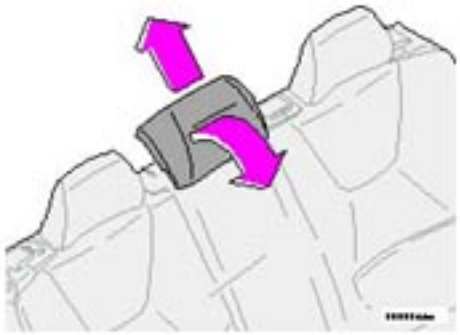


Folding down the center section of the backrest

XC70 with 3-section rear seat

To fold down the center section of the backrest (without folding down either of the outboard sections): Lower the head restraint. Press the center section backrest catch to the rear and tip the backrest forward.

WARNING!
The backrest must be securely locked when it is returned to the upright position. The word "UNLOCKED" on the lock indicator should not be visible.

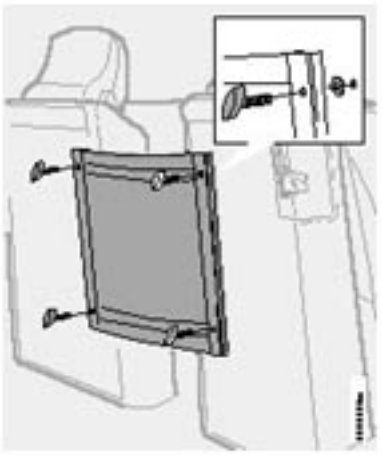


Adjusting the center head restraint

XC70 with 3-section rear seat

To raise - pull the head restraint straight up to the desired height.

To lower - pull the head restraint slightly forward and press down.

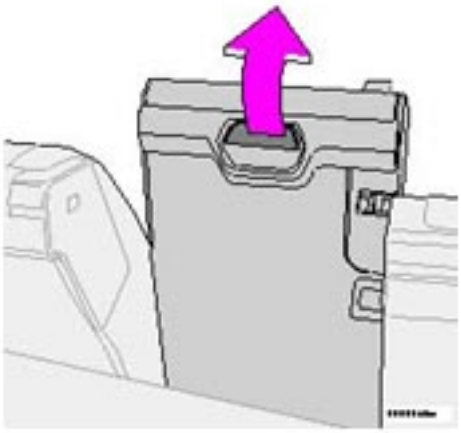


Partition with storage pockets (accessory)

XC70 with 3-section rear seat

A partition with storage pockets is available as an accessory on V70 models with a 3-section rear seat. This partition can help prevent objects in the cargo area from being thrown forward when the center section of the backrest is not in the upright position. Please refer to the installation instructions that are included with the partition or consult your Volvo retailer.

pg. 65 Rear seat and cargo area



Removing the center backrest

XC70 with 3-section rear seat

- Press the button at the top of the center section to the rear to release the locking mechanism.
- Fold the backrest section slightly forward.
- Pull up on the handle at the upper rear side of the backrest (see illustration above) to release this section of the backrest from the retaining bar at the base of the backrest. Lift out the backrest.

Replacing the center backrest

- Before the center section is put back in place, the right section of the backrest must be locked in the upright position.
- Replace the backrest by pressing the bottom section onto the retaining bar until the backrest clicks into place.

Please consult your Volvo retailer for information about accessory equipment that can be placed in the center section of the backrest.

WARNING!

- For safety reasons, the center section of the backrest or seat cushion should not be left in the car after they have been removed.
- Please be aware that with the center section of the backrest removed, unanchored objects in the rear cargo area could be thrown forward between the outboard sections of the backrest in the event of a sudden stop.
- When the center section of the backrest is put back in place, the right-hand section of the backrest must be in the upright position in order to lock the center section securely in place and to be able to use the center seat belt.

Center armrest

Center armrest

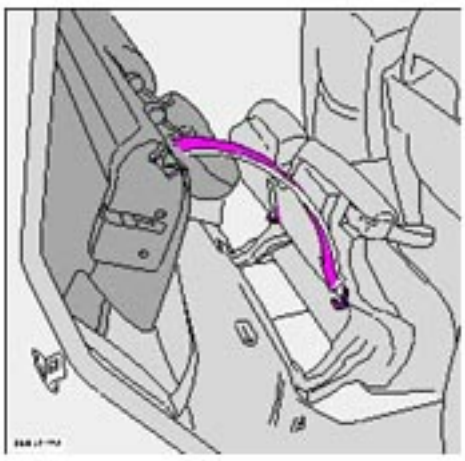
XC70 with 3-section rear seat

The center backrest can be reversed and used as an armrest.

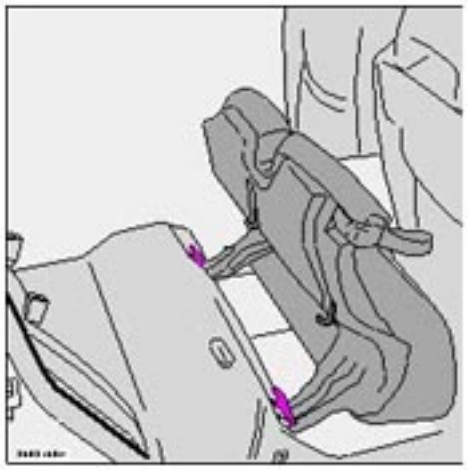
- Remove the center backrest as described in the above.
- Turn the backrest so that the front side faces up (see illustration above).
- Press the backrest back onto the retaining bar until it locks in place.

To return the backrest to its normal position, pull the handle (which is now at the front, on the underside) to release the backrest from the retaining bar. Return the backrest to the normal position as described in the above.

pg. 66 Rear seat and cargo area



NOTE: Make sure that the holes in the plastic ferrules on the top of the backrest engage the hooks on the bottom of the seat cushion. When you later raise the backrest and seat cushion, the head restraints must be returned to their normal positions.

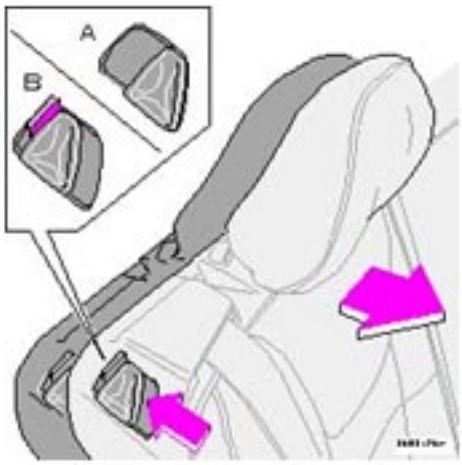


Removing the seat cushion

Models with 2 or 3-section rear seat

Pull up the seat by the handle. Unlock the two red locking tabs. Lift out the seat. When replacing, do everything in reverse order. Make sure the red locking tabs are in a locked position.

WARNING!
The red lock indicator is VISIBLE (B) when the backrest is NOT locked in position and not visible (A) when the backrest is correctly locked in place. When the backrest is in the upright position, it must always be correctly locked in place.



A - Catch in closed position.
B - Catch in open position.

Rear seat backrest

You can adjust the angle of the rear seat backrests. To adjust a backrest to a more upright position:

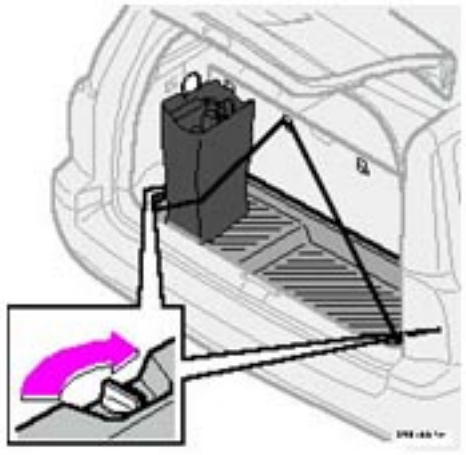
- Press the catch until the red mark is visible.
- Pull the backrest forward to a new locked position.
- Make sure that the backrest is secured in a locked position and that the red mark is no longer visible.

Follow the same procedure to adjust the backrest to a less upright position.

pg. 67 Cargo area

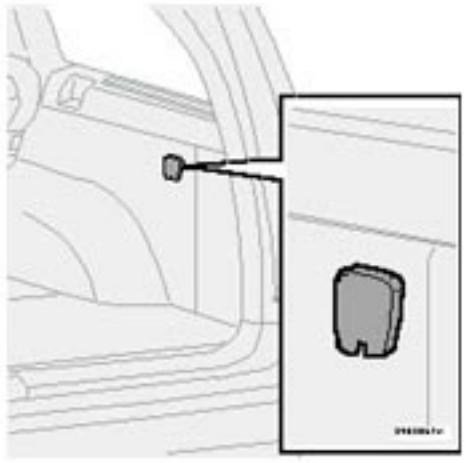
Cargo area lighting

An extra roof lamp is fitted at the end of the cargo area.



Holder for grocery bags (option)

Open the tailgate. Hang or secure your grocery bags by means of tensioning straps or holders. To remove the plastic tray (option), turn the two knobs at the sides.



Auxiliary 12 Volt socket in cargo area (option)

Fold down the cover when you want to use the electric socket.

NOTE: The socket is live whether the ignition is switched on or off. Using the socket without the engine running can drain your car's battery.

pg. 68 Securing cargo

Securing cargo

As a safety precaution, your car is equipped with four eyelets in the cargo space to which straps can be attached to secure luggage.

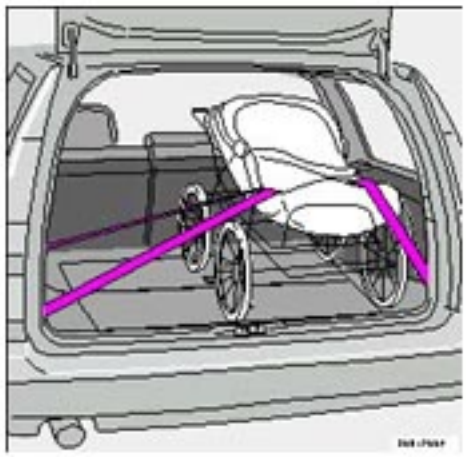
WARNING!
The eyelets are not to be used as passenger restraints or as anchorages for child restraints.

Unless the car is equipped with an optional Volvo auxiliary seat for children, passengers should not ride in the rear cargo area.

Remember that a 44 lbs object produces a force of 2,200 lbs in a head-on collision at 30 mph!

Auxiliary seat

If an auxiliary seat is installed in the vehicle, store the seat before loading cargo. The auxiliary seat is not designed to carry or restrain cargo.

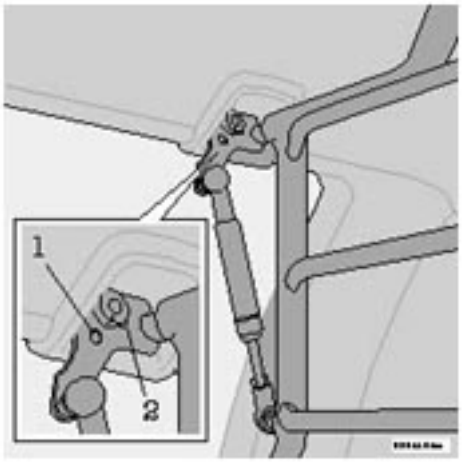


Remember the following when loading the car:

- Load the cargo **against** the backrest.
- Load heavy cargo as low as possible.
- Load wide cargo on either side of the rear seat split.
- If no one is sitting in the rear seat, reinforce the backrest by fastening the rear seat belts.
- Never load cargo above the backrest without a cargo net.

WARNING!
When the rear seat backrest(s) are folded down, the car should not be loaded to a level higher than 2 in. (5 cm) below the upper edge of the rear passenger door windows. Objects placed higher than this level could impede the function of the inflatable curtain.

pg. 69 Steel grid/Cargo net



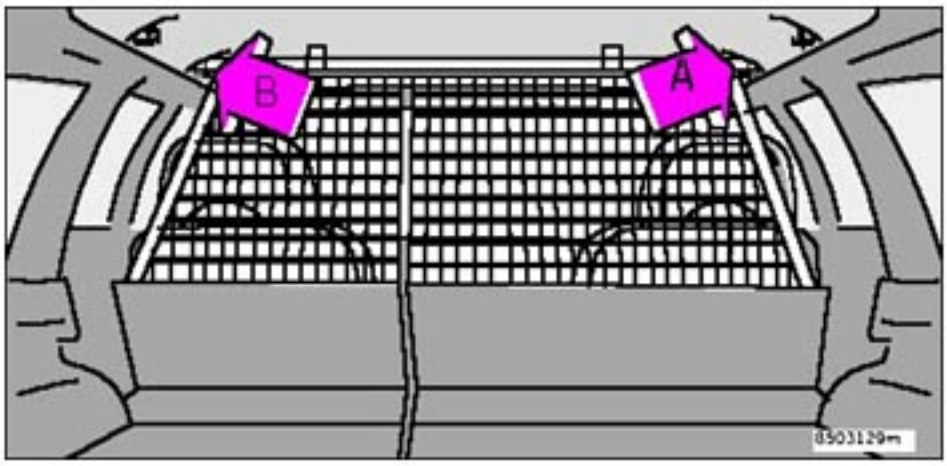
Steel grid

Steel grid (accessory)

To remove the steel grid:
1. Fold down the entire rear seat backrest.
2. Press and turn the knobs on opposite ends of the steel grid with a torx screwdriver (found in the car's tool bag, stored with the spare wheel) until the marks on the knobs are aligned with red dots (1 in the inset illustration above).
3. The steel grid is spring loaded. Push the grid toward the left (driver's) side of the car to release it from the retaining bracket on the opposite side. Keep the grid straight when performing this step so that it does not become wedged in place.
4 Pull the opposite end of the grid out the retaining bracket.

WARNING!
When the steel grid is installed, make sure that the marks on the knobs are aligned with the green dots (2 in the inset illustration in the above), which indicates that the grid is locked in place.

To install the steel grid, perform the steps in the reverse order.



Cargo net

Cargo net (option on V70)

Models with 2-section rear seat

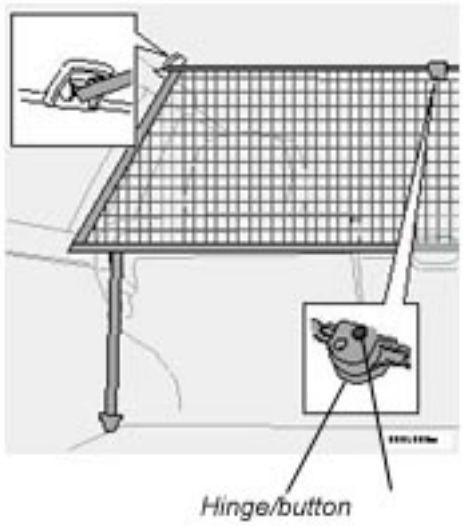
Your car can be equipped with a cargo net made of strong nylon fabric that can be unrolled from the rear seat backrest. After being unrolled, the cargo net self-locks after about a minute.

- Pull up the right-hand cargo net.
- First hook the rod in the bracket on the right-hand side (A). Then pull the rod out and hook it on the left-hand side (B).
- Pull up the left-hand cargo net and secure it to the rod.
- To remove, proceed in reverse order.

NOTE: Make sure that the cargo net is securely fastened in the hooks. To remove, proceed in reverse order.

The cargo net can also be used when the rear seat is folded forward.

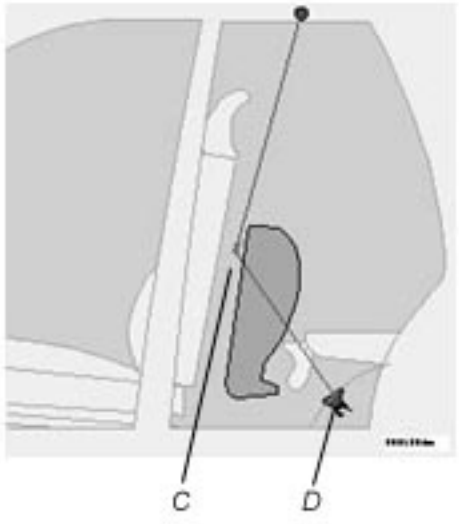
pg. 70 Nylon cargo net (XC70 with 3-section rear seat)



Nylon cargo net (option on XC70)

The Volvo XC70 can be equipped with a cargo net made of strong nylon fabric that can be installed with the rear seat backrests in the upright position or folded down. The upper and lower rods of the cargo net are hinged. If the cargo net is folded, fold the rods until they are straight and lock in position.

- Insert the end of the upper rod in the bracket A, near the ceiling liner in the cargo area if the rear seat backrests are up or in the brackets above the rear passenger doors if the backrests are folded down.
- Insert the opposite side of the rod in the upper bracket on the opposite side.
- Attach the lower straps to the eyelets on opposite sides of the rear cargo area (if the rear seat backrest is upright), or to the eyelets near the base of the rear seat, D (if the backrest sections are folded down and the upper rod has been attached to the forward brackets). Adjust the straps to pull the net taut.



WARNING!
The nylon cargo net must not be used when the optional rear-facing auxiliary child seat in the cargo area is in use.

When not in use, the cargo net should not be stored unattached in the car to prevent it from being thrown forward in the event of a sudden stop, etc.

CAUTION:

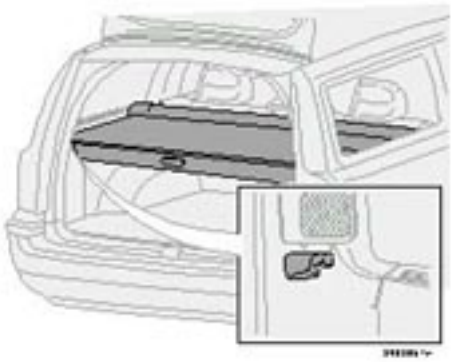
- If the net is installed in the forward position and the rear seat cushions are folded forward, the net should be positioned so that it is in front of the rear seat cushions but behind the front seat backrests (C).
- The eyelets on the floor of the car under the front seats must not be used to secure the lower straps of the cargo net. If these eyelets are used and the front seats are moved back, the cargo net or upper brackets may be damaged.

Folding and storing the cargo net

The cargo net can be folded and stored under the floor of the cargo area on cars not equipped with the optional auxiliary rear-facing child seat or the optional bass speaker.

Press the buttons on the hinges at the center of the upper and lower rods. This releases the hinges so that the net can be folded.

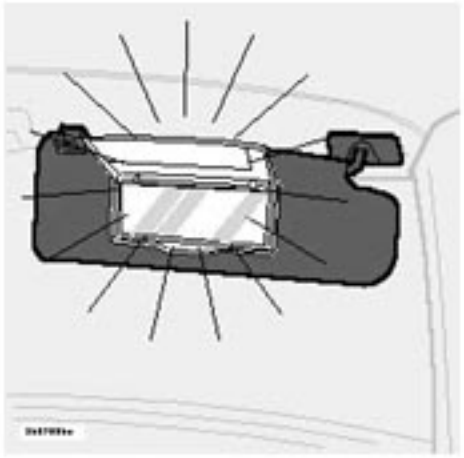
pg. 71 Cargo area cover, Vanity mirrors



Cargo area cover

Withdraw the cargo area cover, pull it over the luggage compartment and hook it in the holes in the rear cargo area pillars. **Removing the cargo area cover:**

- Press the end pieces of the cargo area cover inward, pull up and remove.
- To fit in place: Press the end pieces of the cargo area cover down into the holders.

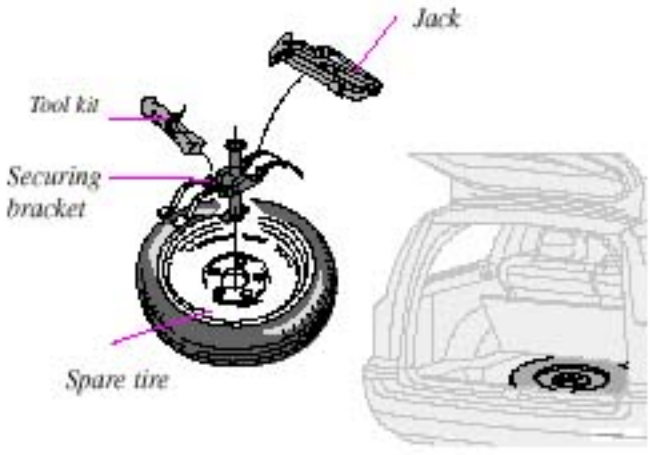


Vanity mirror

Vanity mirrors

Both sun visors are equipped with lighted vanity mirrors. The light comes on when the cover is opened.

pg. 72 Spare tire



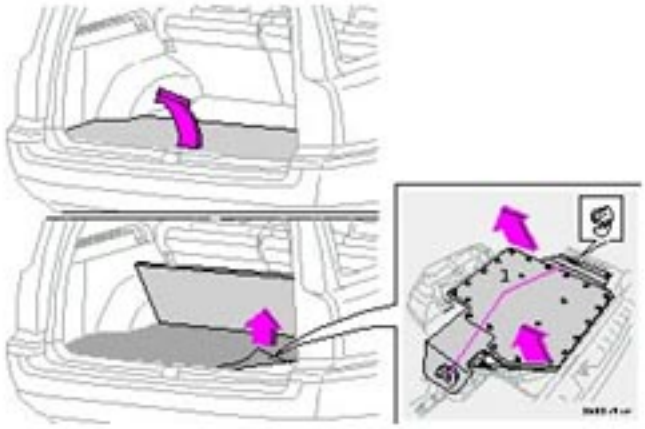
Spare tire

The spare tire, jack and tool kit are located under the floor of the cargo space. To access the spare tire:

- Remove the rear hinged floor panel by raising it approx. 6 inches (15 cm) and then pulling it backwards out of the cargo area.

- Unscrew and remove the accessory plastic floor tray (if fitted).
- Unstrap and lift out the jack and tool kit.
- Unscrew the securing bracket and remove the spare tire from the storage well.
- When putting the tire back into the well, perform these steps in reverse order. Make sure the spare tire, jack and tool kit are properly secured.

WARNING!
Make sure that the spare tire, jack and tool kit are properly secured with the securing bracket and strap to help keep these components in place in the event of a sudden stop.

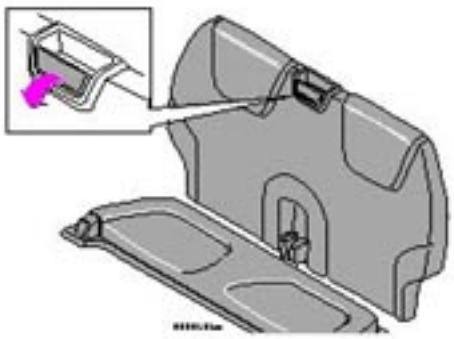


Spare tire, tool kit, jack - cars with subwoofer (option)

The spare tire, jack and tool kit are located under the floor of the cargo space in a compartment in front of the spare tire. To access the spare tire:

- Remove the rear hinged floor panel by raising it approx. 6 inches (15 cm) and then pulling it backwards out of the cargo area.
- Raise the other floor panel to upright position and lock it there.
- Remove the mat.
- Loosen the wheel and turn the clip 90°.
- Lift the subwoofer inwards-upwards with both hands and tilt it leftwards.
- Unstrap and lift out the jack and tool kit.
- Unscrew the securing bracket and remove the spare tire from the storage well.
- When putting the tire and subwoofer back into place, perform these steps in reverse order. Make sure the spare tire, jack, tool kit and subwoofer are properly secured.

pg. 73 Auxiliary seat in cargo area, Extra handgrip - XC70



Auxiliary seat (option)

If all the seats are occupied, a rear-facing auxiliary seat in the cargo area can be used. This seat is designed for two children, each weighing between 50 - 88 lbs. (23 - 40 kg) with a total seat capacity of 176 lbs. (80 kg) and up to 55 inches (140 cm) in height.

Raising
Remove the cargo area cover, if installed, from the car. Raise the backrest section forward until it locks in place.
Flip the seat cushion over.

Lowering
Flip the seat cushion back into storage position.
Pull the release handle and lower the backrest to storage position.

WARNING!

- If your car is equipped with an auxiliary seat (option or accessory), the tailgate must be fitted with a lock cylinder. Unlocking from the outside can then be carried out in the usual way (key in driver's door and/or remote control) and also by using the key in the tailgate.
- Both rear seat backrests must be up when the auxiliary seat is being used. Do not use a booster cushion or child seat in conjunction with the auxiliary seat.
- The luggage net should be retracted and the child safety lock in the tailgate should be open to allow access to the cargo area.

NOTE: If you have locked the car with the remote control and if you then afterwards use a key in the tailgate's lock cylinder (certain models) to unlock the tailgate only, the alarm will sound. See page 80 for information on turning off a sounding alarm.

Extra handgrip

The Volvo XC70 is equipped with an extra handgrip on the front passenger's side. This handgrip can be used for added support when travelling on unpaved roads, etc.

pg. 74 Interior lighting

Courtesy light

The courtesy light can be turned on or off by pressing the button. The light also has a timer function which turns the light on for 30 *seconds* if:

- You unlock the car from the outside with the key or remote control.
- You switch off the ignition (turn the key to position 0).

The courtesy light stays on for 10 minutes if one of the doors is left open after the car is unlocked. The courtesy light switches off if:

- The engine is started.
- The car is locked from the outside with the key or remote control.

The interior courtesy light can be switched on or off at any time by pressing the center button in the panel above the rearview mirror. When switched on with the engine off, the light will stay on for 10 minutes. When switched on with the engine running, the light will stay on indefinitely. The light may be switched off at any time by pressing the center button a second time.

The courtesy light timer periods can be changed. Consult your Volvo retailer.

Overriding the Interior Courtesy Lights

Normally if a car door is left open with the engine turned off, the interior courtesy light will stay on for 10 minutes.

If a car door is left open or the interior courtesy lights are turned on while the engine is left running, the interior courtesy lights will stay on indefinitely.

At times, you may wish to be assured that the courtesy lights will stay off regardless of door or tailgate position.

To switch off the interior and tailgate courtesy lights indefinitely, press and hold the center button in the panel above the rearview mirror for 3 seconds. The courtesy lights will go off and remain off until the center button is pressed again.

Rear reading lights

Reading lights - front/rear

The reading lights can be switched on or off by pressing the respective buttons. These lights switch off automatically after 10 minutes if the engine is not running. If the engine is running, the lights stay on indefinitely. The lights can be switched off at any time by pressing the button.

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2003 VOLVO V70

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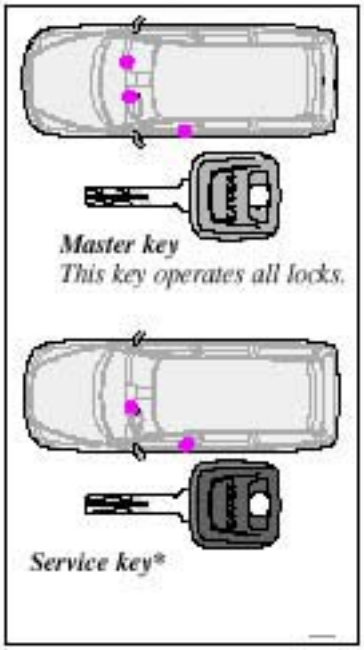
pg. 76 Keys, Exterior courtesy lights, Locking and unlocking the car



Keys

Two keys are provided with your car; a master key and a service key. The master key, the remote control, and the central locking button may all be used to lock and unlock all of your car's locks.

The service key will operate only the driver's door and the ignition switch. It is intended to help deter unwanted entry into the glove compartment and trunk.

Turn the key once to unlock the driver's door and the fuel filler door.

Turn the key again (within 10 seconds) to unlock all doors and the tailgate. One turn with the key towards lock in the drivers door locks all doors and tailgate.

Use the switch on the front door armrests to lock/unlock the car from the inside.

WARNING!
If the doors are locked while driving, this may hinder rapid access to the occupants of the car in the event of an accident. (Also see information on "Child safety locks").

NOTE: To help prevent accidentally locking the keys in the car, the central locking system is designed to unlock the doors immediately if the key is left in the ignition switch, the car is locked using the lock button on the door and the door is then closed. **A sound from the lock will be audible at this time.**

Please note that this function will not unlock the doors if the engine is running.

Immobilizer (start inhibitor)

Each of the keys supplied with your car contains a coded transmitter. The code in the key is transmitted to an antenna in the ignition switch where it is compared to the code stored in the start inhibitor module. The car will start only with a properly coded key. If you misplace a key, take the other keys to an authorized Volvo retailer for reprogramming as an antitheft measure.

*This key operates only driver's door and ignition switch/steering wheel lock.

This device complies with part 15 of the FCC rules. Operation is subject to the following condition: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Exterior courtesy lights

Home Safe System

When you leave your car at night, you can make use of the courtesy lighting function:

- Remove the key from the ignition switch.
- Pull the direction indicator lever towards the steering wheel (as when activating the high beams).
- Exit the car and lock the doors.

The headlights, parking lights, license plate lights and the lights in the sideview mirrors will now come on and remain on for 30, 60 or 90 seconds (the time interval is at your discretion and can be changed by an authorized Volvo retailer).

Approach lighting

When approaching the car at night, press the yellow button in the central locking remote control (see illustration on page 77). This lights up the interior courtesy light, parking lights, license plate lights and the lights in the sideview mirrors.

pg. 77 Remote keyless entry system

Remote keyless entry system

Your car is equipped with a remote control transmitter. This transmitter uses a radio frequency which will allow "keyless" entry into the passenger compartment or the tailgate. Your car is supplied with two coded key ring transmitters, which will enable you to lock/ unlock all doors and the tailgate from a distance of 10-15 feet (3-5 meters). The remote transmitter will also activate or deactivate the your car's

alarm system(s). **The car can also be locked/unlocked with the key.**

If one of the transmitters is misplaced, contact your nearest authorized Volvo retailer for assistance.

Buttons in remote control
1 - Lock, 2 - Unlock, 3 - Open tailgate
*4 - "Panic" function *, 5 - Approach lighting*

Using the remote control

- Press the **LOCK** button once to lock all doors, fuel filler door and tailgate.
- Press the **UNLOCK** button **once** to unlock the driver's door only. Press this button again (within 10 seconds) to unlock all doors, fuel filler door and tailgate.
- To open the tailgate (without unlocking the other doors), press the tailgate-unlock button **twice**.

NOTE:
- If the doors are unlocked with the remote, the locks will automatically reengage (re-lock) and the alarm will reset after 2 minutes unless a door has been opened.
- The lock/unlock and alarm features can also be utilized by using the keys.

FCC ID:LQNP2T-APU
This device complies with part 15 of the FCC rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian 2306104388
Model 504 2927 by Donnelly Operation is subject to the following conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device

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Canadian 2306104388A
Model 509 977 by Connaught Electronics Operation is subject to the following conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including

interference that may cause undesired operation of the device

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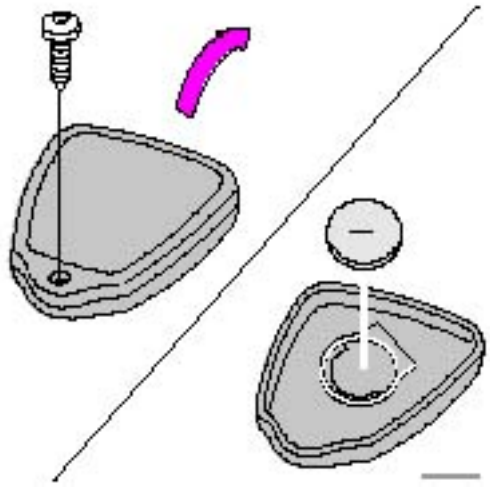
* See page 80 for more information on this function.

pg. 78 Remote keyless entry system



Remote keyless entry system - replacing batteries

If the range of the transmitter is noticeably reduced, this indicates that the battery is weak and should be replaced.

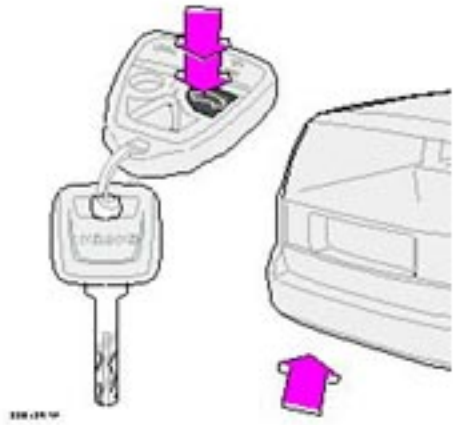
To replace the battery

- Remove the screw on the transmitter cover with a small screwdriver
- Remove the cover carefully pressing it rearward/upward
- Replace the battery with a new 3-volt, CR 2032 battery. The battery should be inserted with the minus side upward. Avoid touching the contact surfaces of the battery with your fingers.
- Reinstall the cover and tighten the screw to help protect the transmitter.

NOTE: The old battery should be disposed of properly at a recycling center or at your Volvo retailer.

WARNING!
Volvo does not recommend using the transmitter to lock the doors from inside the car. The alarm would be activated and would sound when one of the doors is opened. The doors must not be locked using the remote transmitter while the vehicle is occupied. In case of an accident, this may hinder rapid access to the occupants of the vehicle. The alarm will also sound.

pg. 79 Locking and unlocking the car



Unlocking the tailgate

The tailgate lock is incorporated in the central locking system and is locked or unlocked when the driver's door is locked/unlocked.

The tailgate can be unlocked by:

- Pressing UNLOCK on the remote control twice.
- Using the central locking button on the driver's door.
- Pressing twice on the remote control's tailgate unlock button.

Automatic relocking:
If you use the tailgate unlock button to unlock the tailgate without opening it, it will automatically relock after approximately 2 minutes.

However, if you open the tailgate and close it again, it will remain unlocked and the alarm will not be rearmed. Press the lock button on the remote control to relock the tailgate and rearm the alarm.

Central locking buttons

Central locking buttons

These buttons (located on the both front door armrests) can be used to lock/unlock all doors and the tailgate and set the alarm.
The rear passenger doors can also be locked and unlocked with the individual lock buttons on each door.

pg. 80 Alarm

Alarm

The alarm is automatically armed whenever you lock your car. When armed, the alarm continuously monitors a number of points on the car. The following conditions will set off the alarm:

- The hood is forced open.
- The tailgate is forced open.
- A door is forced open.
- The ignition switch is tampered with.
- If there is movement in the passenger compartment (if the car is equipped with the optional movement sensor).
- The car is lifted or towed (if the car is equipped with the optional inclination sensor).
- The battery is disconnected (while the alarm is armed).

Arming the alarm

Press the LOCK button on the remote control, lock the car using the key in the driver's door or press the central lock button on one of the front doors with the door open. One long flash of the turn signals will confirm that the alarm is armed.

Disarming the alarm

Press the UNLOCK button on the remote control or unlock the doors with the key.

Turning off (stopping) the alarm

If the alarm is sounding, it can be stopped by pressing the UNLOCK button on the remote control or by unlocking the driver's door with the key.

Visual alarm signal

The visual alarm signal is given by flashing all turn signals and turning on the interior lighting for approximately 5 minutes.

Audible alarm signal

An audible alarm signal is given by a battery powered siren. One alarm cycle lasts for 25 seconds.

"Panic" button

In an emergency situation, this feature can be used to attract attention. Activate the "panic" function by pressing the red button on the remote control (see illustration on page 77) for at least 3 seconds or by pressing this button twice within 3 seconds. The turn signals will flash, the interior lights will go on and the car's horn will sound.

The function can be turned off by pressing any of the buttons on the remote control or will stop automatically after 25 seconds. When a button is pressed, there is a 5 second delay before the panic alarm is deactivated.

NOTE: This function will **NOT** unlock the car.

Temporarily turning off the alarm sensor(s) - accessory

This button will only be found in cars equipped with the optional inclination and/or movement sensors. In certain situations it may be desirable to turn off the optional inclination and movement alarm sensors if, for example, you drive your car onto a ferry where the rocking of the boat could trigger the alarm or if a pet is left in the car with the doors locked.

To temporarily turn off the inclination and movement alarm sensors from the alarm system:

From the time the ignition key is turned from the Drive position (position II) until you lock the car, you can press the button in the center console *. The LED in the switch will light up and a message will be displayed in the text window to indicate that the sensors are disconnected.

The car can then be locked in the usual way to set the alarm.

NOTE: The optional sensors are automatically reconnected to the alarm system the next time the car is unlocked and then locked again.

LED alarm status signals

The status of the alarm system is indicated by the red LED at the top of the dash:

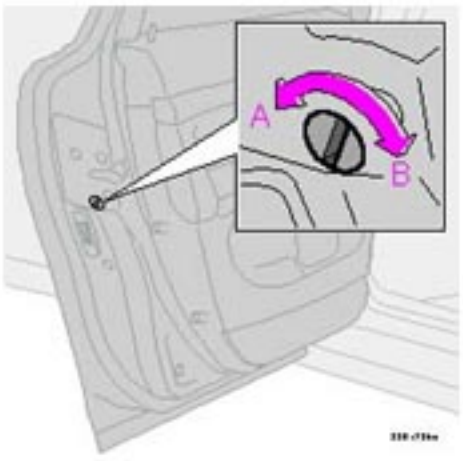
- LED off - the alarm is not armed
- LED flashes once per second - the alarm is armed
- LED flashes rapidly before the ignition is switched on - the alarm has been triggered
- **Fault in the alarm system:** If a fault has been detected in the alarm system, a message will be displayed in the text window. Contact a Volvo retailer.

Automatic re-lock/re-arm system

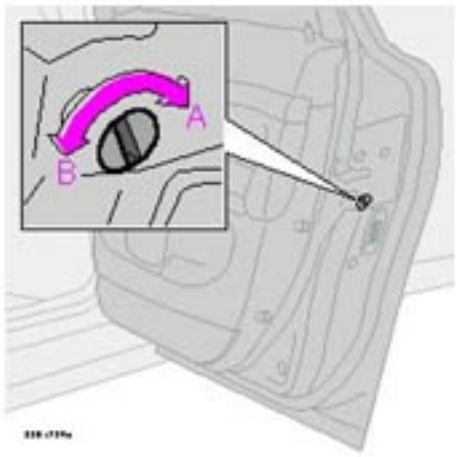
If the car is unlocked with the remote, the car will re-lock and the alarm will re-arm after 2 minutes unless a door or the tailgate has been opened.

* The position of this button may vary, depending on the specifications of your car.

pg. 82 Child safety locks - rear doors



Child safety lock control in left rear door



Child safety lock control in right rear door

Child safety locks - rear doors

The controls are located on the rear door jambs. Use a screwdriver to adjust these controls.

A The door cannot be opened from the inside. Normal operation from the outside.

B The door lock functions normally.

WARNING!
Remember, in the event of an accident, the rear seat passengers cannot open the doors from the inside with the buttons in position A.

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2003 VOLVO V70

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pg. 84 Fuel requirements

Fuel requirements

Octane rating: Volvo engines are designed for optimum performance on unleaded premium gasoline with an octane rating AKI of 91, or above. AKI (ANTI KNOCK INDEX) is an average of the Research Octane Number, RON, and the Motor Octane Number, MON. (RON + MON/2). The minimum octane requirement is AKI 87 (RON 91).

Deposit control gasoline (detergent additives)
Volvo recommends the use of gasoline containing deposit control additives. These additives have shown to be effective in keeping injectors and intake valves clean. Consistent use of deposit control gasolines will help ensure good driveability and fuel economy. If you are not sure whether the gasoline contains deposit control additives, check with the service station operator.

Unleaded fuel
Each Volvo has a three-way catalytic converter and must use only unleaded gasoline. U.S. and Canadian regulations require that pumps delivering unleaded gasoline be labelled "UNLEADED". Only these pumps have nozzles which fit your car's filler inlet. It is unlawful to dispense leaded fuel into a vehicle labelled "unleaded gasoline only". Leaded gasoline damages the three-way catalytic converter and the heated oxygen sensor system. Repeated use of leaded gasoline will lessen the effectiveness of the emission control system and could result in loss of emission warranty coverage. State and local vehicle inspection programs will make detection of misfueling easier, possibly resulting in emission test failure for misfueled vehicles.

NOTE: Some U.S. and Canadian gasolines contain an octane enhancing additive called methyl-cyclopentadienyl manganese tricarbonyl (MMT). If such fuels are used, your Emission Control System performance may be affected, and the Check Engine light (malfunction indicator lamp) located on your instrument panel may light. If this occurs, please return your vehicle to an authorized Volvo retailer for service.

Gasoline containing alcohol and ethers

"Oxygenated fuels"

Some fuel suppliers sell gasoline containing "oxygenates" which are usually alcohols or ethers. In some areas, state or local laws require that the service pump be marked indicating use of alcohols or ethers. However, there are areas in which the pumps are unmarked. If you are not sure whether there is alcohol or ethers in the gasoline you buy, check with the service station operator. To meet seasonal air quality standards, some areas require the use of "oxygenated" fuel.
Volvo allows the use of the following "oxygenated fuels; however, the octane ratings listed on this page must still be met.

Alcohol - Ethanol: Fuels containing up to 10% ethanol by volume may be used. Ethanol may also be referred to as Ethyl alcohol, or "Gasohol".

Ethers - MTBE: Fuels containing up to 15% MTBE may be used.

CAUTION! Do not use gasolines containing methanol (methyl alcohol, wood alcohol). This practice can result in vehicle performance deterioration and can damage critical parts in the fuel system. Such damage may not be covered under the New Vehicle Limited Warranty.

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pg. 85 Fuel requirements

Carbon Monoxide - Important Warning
Carbon monoxide is a poisonous, colorless, and odorless gas. It is present in all exhaust gases. If you ever smell exhaust fumes inside the vehicle, make sure the passenger compartment is ventilated, and immediately return the vehicle to your retailer for correction.

Fuel Formulations
Do not use gasoline that contains lead as a knock inhibitor, and do not use lead additives. Besides damaging the exhaust emission control systems on your car, lead has been strongly linked to certain forms of cancer.
Many fuels contain benzene as a solvent. Unburned benzene has been strongly linked to certain forms of cancer. If you live in an area where you must fill your own gas tank, take precautions. These may include:

- standing upwind away from the filler nozzle while refueling
- refueling only at gas stations with vapor recovery systems that fully seal the mouth of the filler neck during refueling
- wear neoprene gloves while handling a fuel filler nozzle.

Use of Additives

With the exception of gas line antifreeze during winter months, do not add solvents, thickeners, or other store-bought additives to your car's fuel, cooling, or lubricating systems. Overuse may damage your engine, and some of these additives contain organically volatile chemicals. Do not needlessly expose yourself to these chemicals.

pg. 86 Refueling

Refueling

The fuel tank holds approximately 18.5 US gals (70 liters) or 19 US gals (72 liters) on models equipped with All Wheel Drive, with sufficient volume left over to accommodate possible expansion of the fuel in hot weather. Be aware that the "usable" tank capacity will be somewhat less than the specified maximum. When the fuel level is low, such factors as ambient temperature, the fuel's "Reid vapor pressure" characteristics, and terrain can affect the fuel pump's ability to supply the engine with an adequate supply of fuel. Therefore, it is advisable to refuel as soon as possible when the needle nears the red zone, or when the fuel warning light comes on.

Fuel filler door

Press the button on the light switch panel (see illustration on page 34) when the car is at a standstill to unlock the fuel filler door. Please note that the fuel filler door will remain unlocked until the car begins to move forward. An audible click will be heard when the fuel filler door relocks.
If you intend to leave your car while it is being refueled, this features enables you to lock the door/ tailgate while leaving the fuel filler door unlocked.
You can also keep the car locked if you remain inside it during refueling. The central locking button does not lock the fuel filler door.
Be sure the fuel filler door is not obstructed and is completely closed after refueling. **Open the fuel filler cap slowly during hot weather conditions.**

NOTE: During a transitional period, a small number of service stations may still have fuel nozzles that are not compatible with the fuel filler neck on cars equipped with the evaporative control system. Please refer to page 130 for additional information.

CAUTION:

- Do not refuel with the engine running *. Turn the ignition off or to position I. If the ignition is on, an incorrect reading could occur in the fuel gauge.
- After refueling, close the fuel filler cap by turning it clockwise until it clicks into place *.
- Allow for fuel expansion by not overfilling the tank. Overfilling could also cause damage to the emission control systems.
- Avoid spilling gasoline when refueling. In addition to causing damage to the environment, gasolines containing alcohol can cause damage to painted surfaces, which may not be covered under the New Vehicle Limited Warranty.
- Do not use gasolines containing methanol (methyl alcohol, wood alcohol). This practice can result in vehicle performance deterioration and can damage critical parts in the fuel system. Such damage may not be covered under the New Vehicle Limited Warranty.

** If the fuel filler cap is not closed tightly or if the engine is running when the car is refueled, the Check Engine light (malfunction indicator lamp) may indicate a fault. However, your vehicle's performance will not be affected. Use only Volvo original or approved fuel filler caps.*

pg. 87 Starting the engine

Starting the engine

1. Fasten the seat belt.

WARNING!
Before starting, check that the seat, steering wheel and mirrors adjusted properly. Make sure the brake pedal can be depressed completely. Adjust the seat if necessary. See page 56.

2. Apply the parking brake, if not already set. The gear selector (**automatic transmission**) is locked in the (**P**)ark position (**SHIFT-LOCK**). **Manual transmission: the clutch must be fully depressed.**

3. Without touching the accelerator pedal, turn the ignition key* to the starting position. Allow the starter to operate for up to 10 seconds. Release the key as soon as the engine starts. If the engine fails to start, repeat this step.

For cold starts at altitudes above 6000 ft (1800 meters), depress the accelerator pedal halfway and turn the key to the starting position. Release the pedal slowly when the engine starts.

NOTE:
On certain models, when the car is started, idle speed may be noticeably higher than normal for a short period, depending on the temperature of the engine.
This has been done to help bring components in the emission control system to their normal operating temperature as quickly as possible, which enables them to function normally.

4. To release the gear selector from the (P)ark position, the engine must be running (or the ignition key must be in position II) and the brake pedal must be depressed.

5. Select the desired gear. The gear engages after a very slight delay which is especially noticeable when selecting R.

NOTE:
- Your car is equipped with a **KEYLOCK** system. When the engine is switched off, the gear selector must be in the (P)ark position before the key can be removed from the ignition switch.
- When starting in cold weather, the transmission may shift up at slightly higher engine speeds than normal until the automatic transmission fluid reaches normal operating temperature.

* Your car is equipped with an electronic start inhibitor (immobilizer). The keys you received with your car are specially coded. The code in the key is transmitted to an antenna in the ignition switch where it is compared to the code stored in the start inhibitor module. The car can only be started if a properly coded key is used.

If two of the keys to your car are close together, e.g., on the same key ring, when you try to start the car, this could cause interference in the immobilizer system and result in the car not starting. If this should occur, remove one of the keys from the key ring before trying to start the car again.

pg. 88 Starting the engine

CAUTION:
- The engine should be idling when you move the gear selector. Never accelerate until after you feel the transmission engage! Accelerating immediately after selecting a gear will cause harsh engagement and premature transmission wear.
- Selecting P or N when idling at a standstill for prolonged periods time will help prevent overheating of the automatic transmission fluid.
- Do not race a cold engine immediately after starting. Oil flow may not reach some lubrication points fast enough to prevent engine damage.

WARNING!

- Always place the gear selector in Park and apply the parking brake before leaving the vehicle. Never leave the car unattended with the engine running.
- Always open garage doors fully before starting the engine inside a garage to ensure adequate ventilation. The exhaust gases contain carbon monoxide, which is invisible and odorless but very poisonous.
- An extra mat on the driver's floor can cause the accelerator pedal and the clutch to catch. Check that the movement of the accelerator pedal and clutch is not impeded. Not more than one protective floor covering may be used at one time.

pg. 89 Manual transmission

Shift positions

Depress the clutch pedal completely when changing gears*.

Remove your foot from the clutch pedal while driving. The shift pattern should be followed. Overdrive (5th gear) should be used as often as possible to help improve fuel economy. This gear should be engaged at speeds above approx. 50 mph (80 km/h).

Engaging reverse gear

Reverse gear should only be engaged from a complete stop.

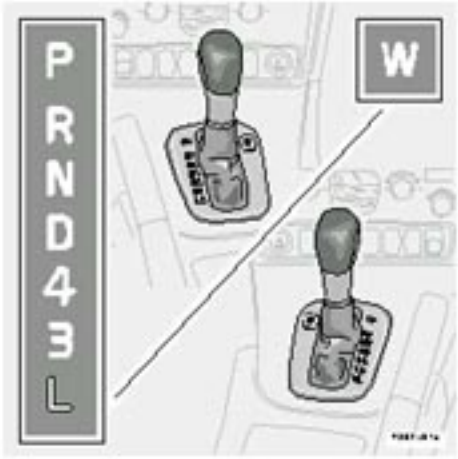
CAUTION: Be careful that you do not inadvertently engage reverse while moving forward.

* Clutch interlock

The clutch must be fully depressed before you can start your car. If the clutch is not depressed, it will not be possible to start the engine.

WARNING!
An extra mat on the driver's floor can cause the accelerator pedal and the clutch to catch. Check that the movement of the accelerator pedal and clutch is not impeded. Not more than one protective floor covering may be used at one time.

pg. 90 Automatic transmission AW5



P (Park)

Use this position when starting the engine or parking the car.

Never use P while the car is in motion.

The parking brake should be set whenever the car is parked.

The gear selector is mechanically locked in the P position (SHIFTLOCK). To release the gear selector from this position, the engine must be running (or the ignition key must be in position II) and the brake pedal must be depressed.

WARNING!
Never leave the car unattended when the engine is running. If, by mistake, the gear selector is moved from P, the car may start moving.

R (Reverse)

Never engage R while the car is moving forward.

N (Neutral)

Neutral - no gear engaged. Use the parking brake.

D (Drive)

D is the normal driving position and should be used as often as possible to help improve fuel economy. The car should not be moving when shifting from R to the D position.

4 (Intermediate gear)

The transmission will shift automatically between gears 4, 3, 2 or 1 from this position. **The transmission cannot shift up to (D)rive from fourth gear.**

3 (Intermediate gear)

The transmission will shift automatically between gears 3, 2 and 1 from this position. The transmission cannot shift up to fourth **gear or (D)rive from third gear.**

L (Low gears)

The transmission is locked in gears 1 and 2 when the selector is in this position.

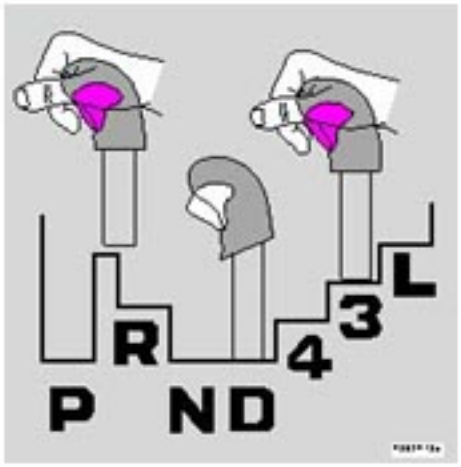
NOTE:

- Gears 4, 3, or L can be used if you are driving in a mountainous area, towing a trailer or to increase engine braking effect.
- The transmission has a built-in limiter designed to help prevent excessive engine speeds (high rpm) when gears 4, 3 or L are selected.

Automatic transmission -adaptive system

The automatic transmission is controlled by an adaptive control system that constantly monitors the way in which the transmission functions. It senses and adapts each gear shift for optimal performance. The system also monitors your particular driving style and adapts gear shifting accordingly.

pg. 91 Automatic transmission AW5



Automatic transmission - shift gate positions

The gear selector can be moved freely between N and D.

Depressing the button on the front of the gear selector knob enables you to move the gear selector to positions P, R, N, D, 4, 3 and L.

W Winter/Wet driving mode - enhanced vehicle traction

- Mode W will only function if the gear selector is in the (D)rive position.
- Press the button at the base of the gear selector to engage/disengage this driving mode (see illustration).
- An LED in the button will light up to indicate that W is engaged and this will also be displayed in the instrument panel (see page 27).
- This mode may be selected for starting/moving off on slippery roads.

Kickdown

Automatic shift to a lower gear (kickdown) is achieved by depressing the accelerator pedal fully and briskly. An upshift will occur when approaching the top speed for a particular gear or by releasing the accelerator pedal slightly. Kickdown can be used for maximum acceleration or when passing at highway speeds.

Cold starts

When driving before the engine has reached its normal operating temperature, the transmission will shift up at slightly higher engine speeds to heat the three-way catalytic converter as quickly as possible.

pg. 92 Automatic transmission (Geartronic)

P (Park)

Use this position when starting the engine or parking the car.

Never use P while the car is in motion. The parking brake should be set whenever the car is parked.

The gear selector is mechanically locked in the P position (SHIFTLOCK). To release the gear selector from this position, the engine must be running (or the ignition key must be in position II) and the brake pedal must be depressed.

WARNING!
Never leave the car unattended when the engine is running. If, by mistake, the gear selector is moved from P, the car may start moving.

R (Reverse)

Never engage R while the car is moving forward.

N (Neutral)

Neutral - no gear engaged. Use the parking brake.

D (Drive)

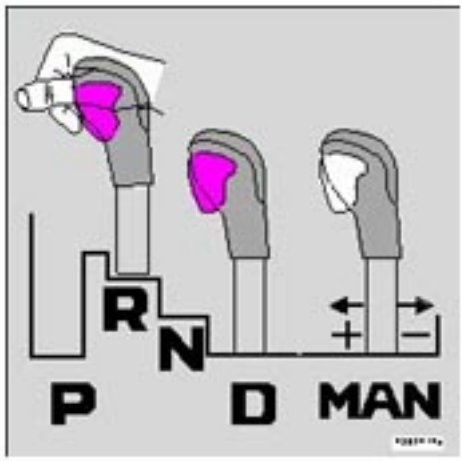
D is the normal driving position and should be used as often as possible to help improve fuel economy. The car should not be moving when shifting from R to the D position.

Kickdown

Automatic shift to a lower gear (kickdown) is achieved by depressing the accelerator pedal fully and briskly. An upshift will occur when approaching the top speed for a particular gear or by releasing the accelerator pedal slightly. Kickdown can be used for maximum acceleration or when passing at highway speeds. **Kickdown does not function when the transmission is in the manual shift (geartronic) mode (see next page).**

Automatic transmission - adaptive system

The automatic transmission is controlled by an adaptive control system that constantly monitors the way in which the transmission functions. It senses and adapts each gear shift for optimal performance. The system also monitors your particular driving style and adapts gear shifting accordingly.



Automatic transmission - shift gate positions

You can move the gear selector freely between the (MAN)ual and (D)rive positions while driving.

Depress the button on the front of the gear selector knob to move between the R, N, D, and P positions.

Please see the following page for information on using the Geartronic manual shift mode.

pg. 93 Automatic transmission (Geartronic)

Manual shifting - Geartronic

You can move the gear selector freely between the (MAN)ual and (D)rive positions while driving. Gears 2, 3, and 4 have a "lock-up" function which reduces engine speed and helps save fuel. The currently selected gear will be displayed in the instrument panel (see page 27).

- To access the (MAN)ual shifting position from (D)rive, pull the gear selector back slightly from D and move it to the left to MAN.
- To return to the (D)rive position from MAN, move the gear selector to the right and push it forward to the (D)rive position.

While driving

If you select the (MAN)ual position while driving, the gear that was being used in the (D)rive position will also initially be selected in (MAN)ual position.

- Move the gear selector forward (toward "+") to shift to a higher gear or rearward (toward "-") to shift to a lower gear.
- If you hold the gear selector toward "-", the transmission will downshift, one gear at a time, and will utilize the braking power of the engine. If the current speed is too high for using a lower gear, the

downshift will not occur until the speed has decreased enough to allow the lower gear to be used.

- If you slow down to a very low speed, the transmission will automatically shift down.
- When starting in the (MAN)ual position, 3rd gear is the highest gear that may be selected.

NOTE: Kickdown (see previous page) **does not function** when the transmission is in the manual shift (geartronic) mode. The gear selector must be in the D (Drive) position.

W Winter/Wet driving mode - enhanced vehicle traction

- Mode W will function only if the gear selector is in the (D)rive position.
- Press the button at the base of the gear selector to engage/disengage this driving mode (see illustration).
- An LED in the button will light up to indicate that **W** is engaged and this will also be displayed in the instrument panel (see page 27).
- This mode may be selected for starting/moving off on slippery roads.

pg. 94 All Wheel Drive - option

All Wheel Drive (AWD) - general information

Your Volvo can be equipped with permanent All Wheel Drive, which means that power is distributed automatically between the front and rear wheels. Under normal driving conditions, most of the engine's power is directed to the front wheels. However, if there is any tendency for the front wheels to spin, an electronically controlled coupling distributes power to the wheels that have the best traction.

Tire dimensions

Volvo recommends that you always drive on tires of the same brand, size, construction (radial), tread

pattern, load-, speed-, traction-, temperature-, and treadwear rating. Never drive on mixed tires, except for brief periods when the temporary spare tire is in use.

Always use properly inflated tires of correct dimensions. Tire size and inflation pressures are shown on the tire pressure label located inside the fuel filler door.

Tire Rotation

Volvo recommends rotating the tires every 7,500 miles (12,000 km). Tires should be rotated front-to-back/back-to-front only. Tires must maintain the same direction of rotation throughout their lifetime, and should never be rotated from one side of the vehicle to the other.

Temporary Spare

The temporary spare tire is for temporary, low-speed, short-distance use only. Replace it with a full-sized tire as soon as possible, in accordance with "Tire Rotation" above. Do not drive on the temporary spare at speeds above 50 m.p.h. (80km/h) or for distances greater than 50 miles (80 km).

Never install snow chains on a temporary spare.

pg. 95 Driving economy

Economical driving conserves natural resources

Better driving economy may be obtained by thinking ahead, avoiding rapid starts and stops and adjusting the speed of your vehicle to immediate traffic conditions. Observe the following rules:

- Bring the engine to normal operating temperature as soon as possible by driving with a light foot on the accelerator pedal for the first few minutes of operation. A cold engine uses more fuel and is subject to increased wear.
- Whenever possible, avoid using the car for driving short distances. This does not allow the engine to reach normal operating temperature.
- Drive carefully and avoid rapid acceleration and hard braking.
- Do not exceed posted speed limits.
- Avoid carrying unnecessary items (extra load) in the car.
- Maintain correct tire pressure. Check tire pressure regularly (when tires are cold).
- Remove snow tires when threat of snow or ice has ended.
- Note that roof racks, ski racks, etc., increase air resistance and also fuel consumption.
- Avoid using automatic transmission kickdown feature unless necessary.
- Avoid using the air conditioning when it is not required. When engaged, the conditioner's compressor places an additional load on the engine. However, at higher driving speeds, fuel consumption will be

lower with the air conditioning on and the windows closed than with the air conditioning off and the windows open.
- Using the onboard trip computer's fuel consumption modes can help you learn how to drive more economically.

Other factors that decrease gas mileage are:
- Dirty air cleaner
- Dirty engine oil and clogged oil filter
- Dragging brakes
- Incorrect front end alignment Some of the above mentioned items and others are checked at the standard Maintenance Service intervals.

NOTE: Vehicles equipped with automatic transmissions should use (D)rive as often as possible and avoid using "kick-down" to help improve fuel economy. Vehicles equipped with manual transmissions should use fifth gear at highway speeds. At other times, choose the highest gear that still allows smooth acceleration.

Weight distribution affects handling

At the specified curb weight your car has a tendency to understeer, which means that the steering wheel has to be turned more than might seem appropriate for the curvature of a bend. This ensures good stability and reduces the risk of rear wheel skid. Remember that these properties can alter with the vehicle load. The heavier the load on the rear of the vehicle (e.g., heavily loaded (max. 220 lbs, 100 kg) cargo area or when towing a trailer, the less the tendency to understeer.

Handling, roadholding

Vehicle load, tire design and inflation pressure all affect vehicle handling. Therefore, check that the tires are inflated to the recommended pressure according to the vehicle load. See "Tire pressure" section. Loads should be distributed so that capacity weight or maximum permissible axle loads are not exceeded.

pg. 96 Points to remember

Cooling system

The risk for engine overheating is greatest, especially in hot weather, when:
- Towing a trailer up steep inclines for prolonged periods at wide open throttle and low engine rpm.
- Stopping the engine suddenly after high speed driving (so-called "after-boiling" can occur).
- To avoid overheating, the following rules should be followed: Do not drive for prolonged periods at

engine speeds above 4500 rpm if you are towing a trailer in hilly terrain.
Reduce speed when towing a trailer up long, steep inclines. The risk of overheating can be reduced by switching off the air conditioning system for a short time.
Do not let the engine idle unnecessarily for prolonged periods.
Do not mount auxiliary lamps in front of the grill.

When the risk of overheating is imminent, or in the event of overheating (the temperature gauge goes repeatedly into, or stays continually in, the red section), the following precautions should be taken:

- Switch off the air conditioning system.
- Pull off the road, away from traffic, stop the car and put the gear selector into neutral.
- Switch the heater to full (maximum) position. Increase the engine speed to approx. 2000 rpm (twice idling speed) until the temperature begins to drop.

WARNING!
Do not remove coolant expansion tank cap. The coolant will be extremely hot.

If necessary, see page 129 and 132 for information on checking and topping-up the coolant level.

CAUTION: Drive slowly and carefully if going through standing water (i.e. flooded roadways, etc.). Damage to the engine could result if excess water is drawn in through the air intake system. Never drive the vehicle in water deeper than 1 foot (300 mm). See the flood warning on page 7.

WARNING!

- **Driving with the tailgate open**: Driving with the tailgate open could mean that poisonous exhaust gases enter the passenger compartment.
If the tailgate must be kept open for any reason, proceed as follows:
- Close the windows.
- Set the ventilation system control to air flow to floor, windshield and side windows and blower control to its highest setting.
- **Floor mats**: An extra mat on the driver's floor can cause the accelerator pedal to catch. Check that the movement of the accelerator pedal is not impeded. Not more than one protective floor covering may be used at one time.

Electrical system

When replacing the battery or when carrying out work involving the electrical system, the following should be observed:

- A battery connection to the wrong terminal will damage the electrical system. Be sure to connect the positive battery cable to the positive battery terminal and the negative battery cable to the negative battery terminal.
- If booster batteries are used for starting, they must be properly connected to minimize the risk of the electrical system being damaged. For correct connection, see "Jump starting" section.
- Never disconnect the battery circuit (for example, to replace the battery) while the engine is running, as this may damage the generator. Always make sure that all the battery connections are properly cleaned and tightened.
- If any electrical welding work is performed on the vehicle, the battery's ground lead (negative cable) and all the connecting cables of the generator must be disconnected and the welder cables placed as near the welding points as possible.
- The radio must be turned off before the battery is disconnected.
- Switch off the ignition for at least 10 minutes before disconnecting the battery.

pg. 97 Roof racks/Load carriers

Load carriers (accessory)

Load carriers are available as Volvo accessories. Observe the following points when in use:

- To avoid damaging your car and to achieve maximum safety when driving, we recommend using the load carriers that Volvo has developed especially for your car.
- Volvo-approved removable roof racks are designed to carry the maximum allowable roof load for this vehicle: 220 lbs (100 kg). For Non-Volvo roof racks, check the manufacturer's weight limits for the rack.
- Never exceed the rack manufacturer's weigh limits and never exceed the maximum rated roof load of 220 lbs (100 kg).
- Avoid single-point loads. Distribute loads evenly.
- Place heavier cargo at the bottom of the load.
- Anchor the cargo correctly with appropriate tie-down equipment.
- **Check periodically that the load carriers and load are properly secured.**
- Remember that the car's center of gravity and handling change when you carry a load on the roof.
- The car's wind resistance (and correspondingly, fuel consumption) will increase with the size of the load.
- Drive smoothly. Avoid rapid starts, fast cornering and hard braking.

Load carrier attachment points

Attaching load carriers (models without rails)

The attachment brackets for the load carriers are located under the roof molding.

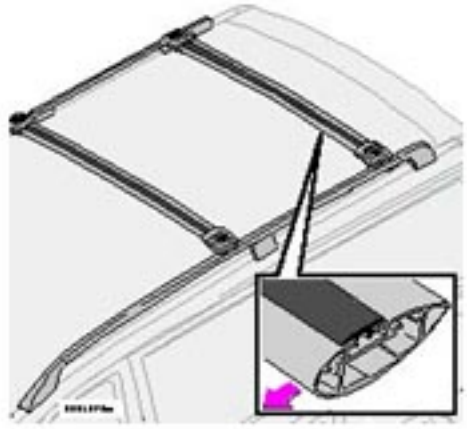
1 Make sure that the load carriers are placed in the right direction. See the mark on the decal under the cover.
2 Press the guide lugs into the holes (1).
3 Carefully lower the opposite side of the load carrier to the roof.
4 Loosen the tightening wheel slightly. Slide the hook on the load carrier attachment into the attachment bracket under the roof molding.
5 Turn the tightening wheel to secure the load carrier in the attachment bracket.
6 Repeat this procedure for the other load carrier attachments.
7 Check that the hooks on all four load carrier attachments are securely tightened in the respective attachment brackets on the roof of the car.
8 Press down the covers.

Check periodically that the load carriers and load are properly secured.

Reducing wind noise and improving fuel economy

To maximize fuel efficiency and minimize wind noise, Volvo recommends that load carriers be removed when not in use.

pg. 98 Load carriers (models with rails)

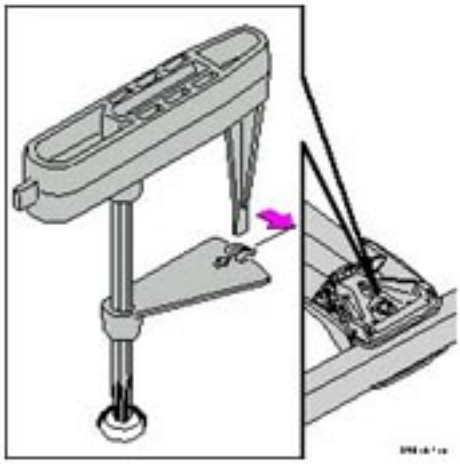


Position of load carriers

Make sure that the wing-shaped load carriers are installed on the roof rails with the rounded edge forward (see the inset illustration above). The load carriers are identical and can be placed anywhere along the roof rails.

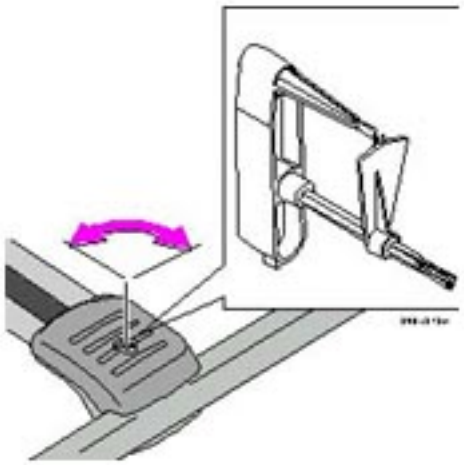
Reducing wind noise and improving fuel economy

To maximize fuel efficiency and minimize wind noise, Volvo recommends that load carriers be removed when not in use.



Fitting the load carriers (accessory)

Make sure that the load carrier is pressed firmly out against the roof rail. Screw the load carrier in place. Use the supplied torque wrench and tighten to the mark on the wrench (corresponding to 6 Nm). See illustration.



Load carrier cover

The car's ignition key or the stud on the edge of the supplied torque wrench can be used to undo or tighten the cover. Turn a quarter turn (90 degrees). See illustration.

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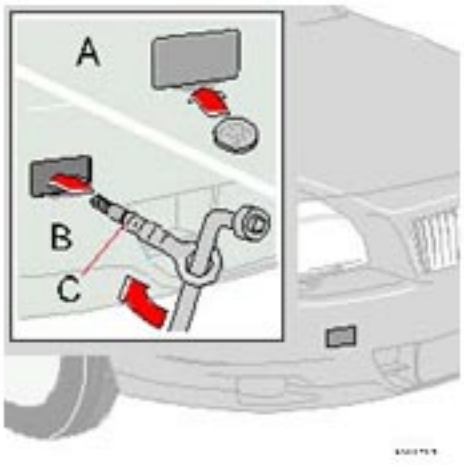
pg. 99 Emergency towing



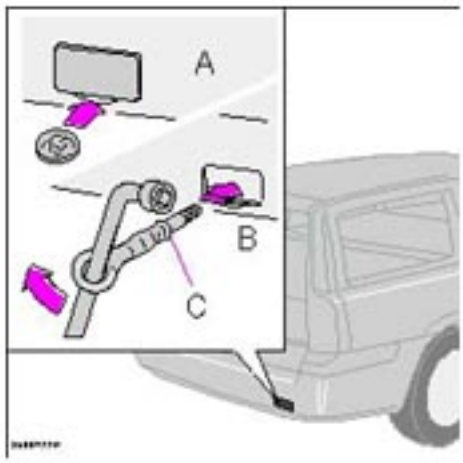
Front towing eyelet

Emergency towing

The towing eyelet is located in the tool kit, under the floor of the cargo area, with the spare tire. This eyelet must be screwed into the positions provided on the right sides of either the front or rear bumper (see illustration). To attach the towing eyelet:

- Use a coin to pry open the lower edge of the cover (A).
- Screw the towing eyelet in place, first by hand and then using the tire iron (B) until it is securely in place.

After the car has been towed, the eyelet should be removed and returned to the tool kit. Press the cover back into position.



Rear towing eyelet

Precautions when the car is in tow

- The steering wheel must be unlocked. Turn the ignition key to position I or II.
- The gear selector must be in position N.
- Maximum speed: 50 mph (80 km/h)
- Maximum distance with front wheels on ground: 50 miles (80 km).
- While the car is being towed, try to keep the tow rope taut at all times.
- Cars with an automatic transmission should only be towed in forward direction.

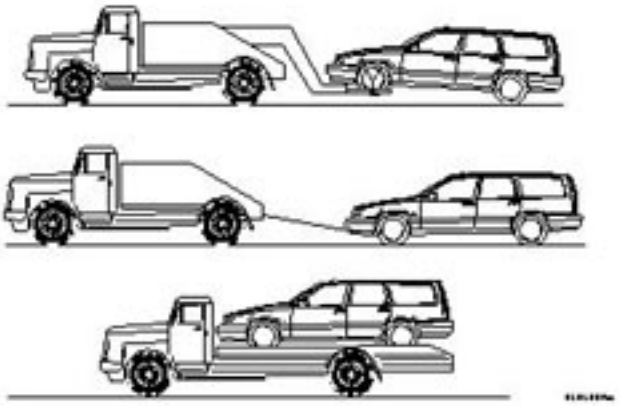
CAUTION:

- Please check with state and local authorities before attempting this type of towing, as vehicles being towed are subject to regulations regarding maximum towing speed, length and type of towing device, lighting, etc.
- If the car's battery is dead, do not attempt to start the vehicle by pushing or pulling it as this will damage the three-way catalytic converter(s). The engine must be jump started using an auxiliary battery (see page 103).
- If the car is being towed on a flat bed truck, the towing eyelets must not be used to secure the car on the flat bed. Consult the tow truck operator.

WARNING!

- Remember that the power brakes and power steering will not function when engine is not running. The braking and steering systems will function but the brake pedal pressure required is 3 - 4 times above normal and greater steering effort must be exerted.
- The towing eyelets must not be used for pulling another vehicle out of a ditch or for any similar purpose involving severe strain.
- Do not use the towing eyelets to pull the car up onto a flat bed tow truck.

pg. 100 Vehicle towing information



Towing cars with all wheel drive/front wheel drive

Volvo recommends the use of flat bed equipment. If wheel lift equipment must be used, please use extreme caution to help avoid damage to the car. **In this case, the car should be towed with the rear wheels on the ground if at all possible.**

If it is absolutely necessary to tow the vehicle with the front wheels on the ground, please refer to the towing information on the previous page.

CAUTION:

- The car must not be driven with wheels of different dimensions/specifications or with a spare tire other than the one that came with the car. The use of different size wheels can seriously damage your car's transmission.
- Sling-type equipment applied at the front will damage radiator and air conditioning lines.
- It is equally important not to use sling-type equipment at the rear or apply lifting equipment inside the rear wheels; serious damage to the rear axle may result.
- If the car is being towed on a flat bed truck, the towing eyelets must not be used to secure the car on the flat bed. Consult the tow truck operator.

WARNING!

- Do not use the towing eyelets to pull the car up onto a flat bed tow truck.

pg. 101 Towing a trailer

When preparing for trailer towing, observe the following:

Volvo recommends the use of Volvo trailer hitches which are specially designed for the car.
- Maximum trailer weight recommended by Volvo is:

Trailers without brakes: 1100 lbs (500 kg)
Trailers with brakes: 3300 lbs* (1,500 kg),
Observe the legal requirements of the state/province in which the vehicles are registered.
- All Volvo models are equipped with energy-absorbing shock-mounted bumpers. Trailer hitch installation should not interfere with the proper operation of this bumper system.

Trailer towing does not normally present any particular problems, but take into consideration:
- Increase tire pressure to recommended full. See section "Wheels and tires".
- When your car is new, avoid towing heavy trailers during the first 620 miles (1000 km).
- Recommended hitch tongue load is:

Trailer weights **below** 2,650 lbs (1,200 kg) - 110 lbs (50 kg)
Trailer weights **above** 2,650 lbs (1,200 kg) - 165 lbs (75 kg)
- Maximum speed when towing a trailer: 50 mph (80 km/h).
- Engine and transmission are subject to increased loads. Therefore, engine coolant temperature should be closely watched when driving in hot climates or hilly terrain. Use a lower gear and turn off the air conditioner if the temperature gauge needle enters the red range.
- If the automatic transmission begins to overheat, a message will be displayed in the text window.
- Avoid overload and other abusive operation.
- Hauling a trailer affects handling, durability, and economy.
- It is necessary to balance trailer brakes with the towing vehicle brakes to provide a safe stop (check and observe state/local regulations).
- Do not connect the trailer's brake system directly to the vehicle's brake system.
- More frequent vehicle maintenance is required.
- Remove the ball and drawbar assembly when the hitch is not being used.
- Volvo recommends the use of synthetic engine oil when towing a trailer over long distances or in mountainous areas.

WARNING!

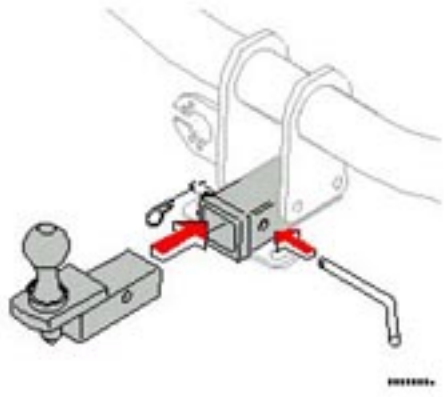
- Bumper-attached trailer hitches must not be used on Volvo's, nor should safety chains be attached to the bumper.
- Trailer hitches attaching to the vehicle rear axle must not be used.
- Never connect a trailer's hydraulic brake system directly to the vehicle brake system, nor a trailer's lighting system directly to the vehicle lighting system. Consult your nearest authorized Volvo retailer for correct installation.
- When towing a trailer, the trailer's safety wire must be correctly fastened to the hole or hook provided in the trailer hitch on the car. The safety wire should never be fastened to or wound around the drawbar ball.

NOTE:

- When parking the car with a trailer on a hill, apply the parking brake **before** putting the gear selector in (P)ark. When starting on a hill, put the gear selector in (D)rive **before** releasing the parking brake.
- If you use the manual (Geartronic) shift positions while towing a trailer, make sure the gear you select does not put too much strain on the engine (using too high a gear).
- The drawbar assembly/trailer hitch may be certified for trailers that are heavier than the car is designed to tow. Please adhere to Volvo's recommended trailer weights.

* When driving for prolonged periods at temperatures above 86° F (30° C), the maximum recommended weight is 2000 lbs (900 kg).

pg. 102 Detachable trailer hitch (accessory) - installing/removing



A - ball holder, B - locking bolt, C - cotter pin, D - hitch assembly

Installing the ball holder

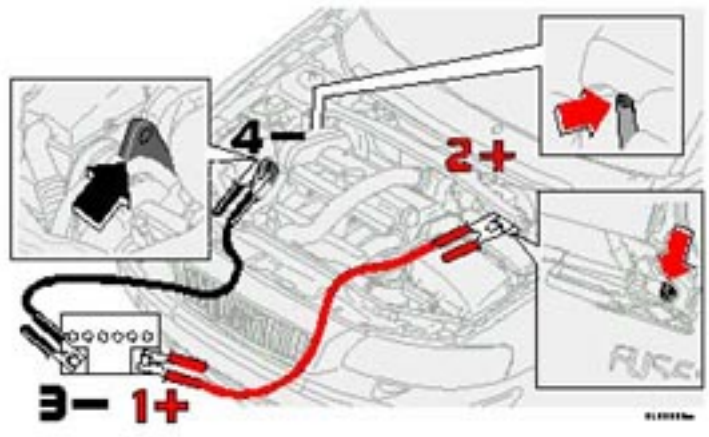
1. If necessary, remove the cotter pin from the locking bolt and slide the locking bolt out of the hitch assembly.
2. Slide the ball holder into the hitch assembly.
3. Align the hole in the ball holder with the one in the hitch assembly.
4. Slide the locking bolt through the hitch assembly/ball holder.
5. Insert the cotter pin in the hole at the end of the locking bolt.

Removing the ball holder

1. Remove the cotter pin from the locking bolt and slide the locking bolt out of the ball holder/hitch assembly.
2. Pull the ball holder out of the hitch assembly.

NOTE: A cover for the hitch assembly can be purchased from your Volvo retailer.

pg. 103 Jump starting



Jump starting

Follow these instructions to jump start your car's dead battery or to jump start another car's dead battery using your car. Although your car's battery is located under the floor of the cargo area, jumper cables should be connected in the **engine compartment**, to the points shown in the illustrations.
If the 12-volt auxiliary battery to be used is in another car, check that the cars are not touching to prevent premature completion of a negative circuit. Be sure to follow jump starting instructions provided for the other vehicle.

To jump start your car:

- Switch off the ignition.

- First connect the auxiliary battery positive (+) terminal (1) to the positive (+) terminal in your car's engine compartment (2), located under a small black plastic cover attached to the fuse box cover, marked with a "+" sign. Remove the cover on the main fuse box if necessary to access this terminal. See page 113.
- Then connect the auxiliary battery negative (-) terminal (3) to the ground point in your car's engine compartment (4).

Start the engine in the assisting car, then start the engine in the car with the dead battery.

- After the engine has started, first remove the negative (-) terminal jumper cable. Then remove the positive (+) terminal jumper cable.

CAUTION:

Improper hookup of jumper cables or use of other than 12-volt batteries could result in damage to equipment and/or the battery.

WARNING!

- Do not connect the jumper cable to any part of the fuel system or to any moving parts. Avoid touching hot manifolds.
- Never expose the battery to open flame or electric spark.
- Do not smoke near the battery.
- Batteries generate hydrogen gas which is flammable and explosive.
- Battery fluid contains sulfuric acid. Do not allow battery fluid to contact eyes, skin, fabrics or painted surfaces. If contact occurs, flush the affected area immediately with water. Obtain medical help immediately if eyes are affected.

Failure to follow the instructions for jump starting can lead to personal injury.

NOTE: Refer to pages 138-139 for information on properly maintaining the battery.

PROPOSITION 65 WARNING!
Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm. Wash hands after handling.

pg. 104 Winter driving

Cold weather precautions

If you wish to check your car before the approach of cold weather, the following advice is worth noting:

- Make sure that the engine coolant contains 50 percent antifreeze. Any other mixture will reduce freeze protection. This gives protection against freezing down to -31°F (-35°C). See section "Coolant". **The use of "recycled" antifreeze is not approved by Volvo. Different types of antifreeze must not be mixed.**
- Volvo recommends using only genuine Volvo antifreeze in your car's radiator. Your local Volvo retailer stocks plenty of Volvo engine coolant to protect your car during cold weather.
- Try to keep the **fuel tank** well filled - this prevents the formation of condensation in the tank. In addition, in extremely cold weather conditions it is worthwhile to add fuel line de-icer before refueling.
- The viscosity of the **engine oil** is important. Oil with low viscosity (thinner oil) improves cold-weather starting as well as decreasing fuel consumption while the engine is warming up. For winter use, 5W-30 oil, particularly the synthetic type *, is recommended. Be sure to use good quality oil but do not use this cold-weather oil for hard driving or in warm weather. **See section "Engine oil" for more information.**
- The load placed on **the battery** is greater during the winter since the windshield wipers, lighting, etc. are used more often. Moreover, the capacity of the battery decreases as the temperature drops. In very cold weather, a poorly charged battery can freeze and be damaged. It is therefore advisable to check the state of charge more frequently and spray an anti-rust oil on the battery posts.
- Volvo recommends the use of snow tires on all four wheels for winter driving - see section "Wheels and tires".
- To prevent the washer fluid reservoir from freezing, add washer solvents containing antifreeze (see page 130 for the location of the washer fluid reservoir). This is important since dirt is often splashed on the windshield during winter driving, requiring the frequent use of the washers and wipers. The Volvo Washer Solvent should be diluted as follows:

Down to 14° F (-10° C): 1 part washer solvent and 4 parts water
Down to 5° F (-15° C): 1 part washer solvent and 3 parts water
Down to 0° F (-18° C): 1 part washer solvent and 2 parts water
Down to -18° F (-28° C): 1 part washer solvent and 1 part water

- Use Volvo Teflon Lock Spray in the locks.

NOTE: Avoid the use of de-icing sprays as they can cause damage to the locks.

W Winter/Wet driving mode - enhanced vehicle traction

- Mode W will only function if the gear selector is in the (D)rive position.
- Press the button at the base of the gear selector to engage/disengage this driving mode (see illustration).
- An LED in the button will light up to indicate that **W** is engaged and this will also be displayed in the instrument panel (see page 27).
- This mode may be selected for starting/moving off on slippery roads.

*Synthetic oil is not used when the oil is changed at the normal maintenance service intervals.

pg. 105 Long distance trips

Before a long distance trip

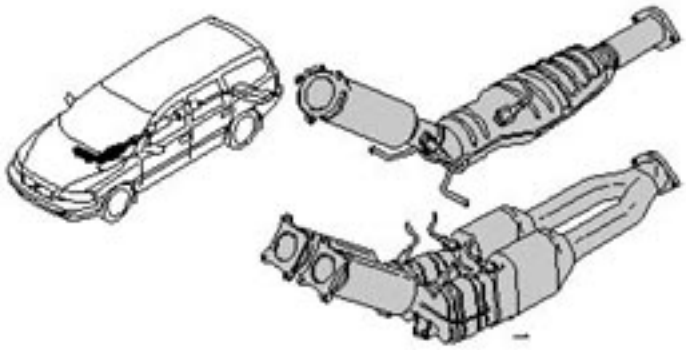
It is always worthwhile to have your car checked at a Volvo retailer before driving long distances. Your retailer will also be able to supply you with bulbs, fuses, spark plugs and wiper blades for your use in the event that problems occur.

As a minimum, the following items should be checked before any long trip:

- Check that engine runs smoothly and that fuel consumption is normal.
- Check for fuel, oil, and fluid leakage.
- Check condition of accessory drive belts.
- Check transmission oil level*.
- Check state of the battery's charge.
- Examine tires carefully (the spare tire as well), and replace those that are worn. Check tire pressures.
- The brakes, front wheel alignment, and steering gear should be checked by your Volvo retailer only.
- Check all lights, including high beams.
- Reflective warning triangles are legal requirement in some countries.
- Have a word with your Volvo retailer if you intend to drive in countries where it may be difficult to obtain the correct fuel.
- Consider your destination. If you will be driving through an area where snow or ice are likely to occur, consider snow tires.

* To prevent injury from contact with hot surfaces, do not inspect your car's transmission fluid yourself. Have your car's transmission fluid level inspected by a qualified Volvo service technician.

pg. 106 Three-way catalytic converters



Three-way catalytic converter cautions

- Keep your engine properly tuned. Certain engine malfunctions, particularly involving the electrical, fuel or distributor ignition systems, may cause unusually high three-way catalytic converter temperatures. **Do not continue to operate your vehicle if you detect engine misfire, noticeable loss of power or other unusual operating conditions, such as engine overheating or backfiring.** A properly tuned engine will help avoid malfunctions that could damage the three-way catalytic converters.
- Do not park your car over combustible materials, such as grass or leaves, which can come into contact with the hot exhaust system and cause such materials to ignite under certain wind and weather conditions.
- Excessive starter cranking (in excess of one minute), with an intermittently firing or flooded engine, can cause three-way catalytic converter or exhaust system overheating.
- Remember that tampering or unauthorized modifications to the engine or the vehicle may be illegal and can cause three-way catalytic converter or exhaust system overheating. This includes:

- Altering fuel injection setting or components.
- Altering emission system components or location or removing components.
- Repeated use of leaded fuel.

NOTE: Unleaded fuel is required for cars with three-way catalytic converters

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2003 VOLVO V70

Chapter 7 - Wheels and tires

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Changing wheels 112

pg. 108 Wheels and tires

General information

Your vehicle is equipped with tires according to the tire information label on the inside of the fuel filler door.

The following is an **example** of a tire designation code: 225/55 R16
225 = tire width in mm.
55 = tire profile. This is the relationship (in percent) between the section height and width of the tire.
R = radial tires.
16 = diameter in inches.

The tires have good road holding characteristics and offer good handling on dry and wet surfaces. It should be noted however that the tires have been developed to give these features on snow/ice-free surfaces. **Certain models are equipped with "all-season" tires, which provide a somewhat higher degree of road holding on slippery surfaces than tires without the "all-season" rating.** However, for optimum road holding on icy or snow covered roads - **we recommend suitable winter tires on all**

four wheels. When replacing tires, be sure that the new tires are the same dimensions, type (radial) and preferably from the same manufacturer, on all four wheels. Do not use bias ply tires. Otherwise there is a risk of altering the car's roadholding and handling characteristics.

NOTE: When storing wheel/tire assemblies (e.g. snow tires and wheels), either stand the assemblies upright, or suspend them off the ground. Laying wheel/tire assemblies on their sides for prolonged periods can cause wheel and/or tire damage.

Wear indicator

The tires have wear indicator strips running across or parallel to the tread. When approx. 1/16" (1.6 mm) is left on the tread, these strips become visible and indicate that the tire should be replaced.

Tires with less than 1/16" (1.6 mm) tread have very poor grip in rain or snow.

To improve tire economy:

- Maintain correct tire pressure. See the tire pressure label on the inside of the fuel filler door.
- Drive smoothly: avoid fast starts, hard braking and tire screeching.
- Tire wear increases with speed.
- Correct front wheel alignment is very important.
- Unbalanced wheels impair tire economy and driving comfort.
- Volvo does not recommend rotating the tires. However, if tires are rotated, they must be kept on the same side of the car so that they revolve in the same direction as before rotation.
- Hitting curbs or potholes can damage the tires and/or wheels permanently.

Flat spots

All tires become warm during use. After cooling, when the vehicle is parked, the tires have a tendency to distort slightly, forming flat spots. These flat spots can cause vibrations similar to the vibrations caused by unbalanced wheels. They do, however, disappear when the tire warms up. The degree to which flat spots form depends on the type of cord used in the tire. Remember that, in cold weather, it takes longer for the tire to warm up and consequently longer for the flat spot to disappear.

CAUTION: The car must not be driven with wheels of different dimensions/specifications or with a spare tire other than the one that came with the car. The use of different size wheels can seriously damage your car's transmission or driveline.

pg. 109 Wheels and tires

Snow chains

Snow chains can be used on your Volvo with the following restrictions:

- Snow chains should be installed on front wheels only. Use only Volvo approved snow chains.
- Special snow chains must be mounted on 215/55 R16. Consult your Volvo retailer.
- If accessory, aftermarket or "custom" tires and wheels are installed and are of a size different than the original tires and wheels, chains in some cases CANNOT be used. Sufficient clearances between chains and brakes, suspension and body components must be maintained. Snow chains cannot be used on 17" wheels.
- Some strap-on type chains will interfere with brake components and therefore CANNOT be used.
- **All Wheel Drive models:**Snow chains should only be installed on the *front* wheels. Only chains adapted for AWD models should be used.

Consult your Volvo retailer for additional snow chain information.

CAUTION:

- Check local regulations regarding the use of snow chains before installing.
- Always follow the chain manufacturer's installation instructions carefully. Install chains as tightly as possible and retighten periodically.
- Never exceed the chain manufacturer's specified maximum speed limit. In no case should you exceed 31 mph (50 km/h).
- Avoid bumps, holes or sharp turns when driving with snow chains.
- Vehicle handling can be adversely affected when driving with chains. Avoid fast maneuvering and hard braking. Never allow the wheels to lock up during braking.

Snow tires, studded tires *

Tires for winter use:

Owners who live in or regularly travel through areas with sustained periods of snow or icy driving conditions are strongly advised to fit suitable winter tires to help retain the highest degree of traction. It is important to install winter tires **on all four wheels** to help retain traction during cornering, braking, and accelerating. Failure to do so could reduce traction to an unsafe level or adversely affect handling. Volvo does not recommend tire rotation. However, as with any other radial tires, if rotated, the tires must be kept on the same side of the car so that they revolve in the same direction as before rotation.

Volvo recommends 195/65 R15 snow tires on non-turbo models. Turbo models should be equipped with 205/55 R16 snow tires on all four wheels (215/65 R16 tires should be used on the XC70).

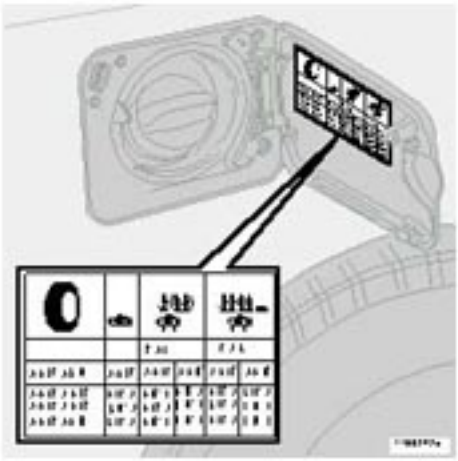
Winter tires wear more quickly on dry roads in warm weather. They should be removed when the winter driving season has ended.

Studded tires should be run-in 300-600 miles (500-1000 km) during which the car should be driven as smoothly as possible to give the studs the opportunity to seat properly in the tires. The tires should have the same rotational direction throughout their entire lifetime. In other words, if you wish to rotate the wheels, make sure that the same wheels are always on the same side of the car.

NOTE: Please consult state or provincial regulations restricting the use of studded winter tires before installing such tires.

* Where permitted.

pg. 110 Wheels and tires



Tire pressure label

Checking and correcting tire pressure

- Check the tire pressure regularly.
- The tire pressure should be corrected only when the tires are cold.
- With warm tires, correct only when the pressure is too low. The tire temperature rises after driving just a few miles.

Vehicle loading

The tires on your Volvo will perform to specifications at all normal loads when inflated as recommended on the tire information label located on the inside of the fuel filler door*. This label also lists vehicle load limits. Do not load your car beyond the indicated limits.

WARNING!
Improperly inflated tires will reduce tire life, adversely affect vehicle handling and can possibly lead to failure resulting in loss of vehicle control without prior warning.

Temporary Spare

The spare tire in your car is called a "Temporary Spare". It has the following designation: T125/80 R17 (T135/90 R17 on the XC70).

At the recommended tire pressure shown on the inside of the fuel filler door, the tire may be used as a temporary replacement for a front or rear tire.

In the event of damage to this tire, a new one can be purchased from your Volvo retailer.

WARNING!
Current legislation prohibits the use of the "Temporary Spare" tire other than as a temporary replacement for a punctured tire. It must be replaced as soon as possible by a standard tire. Road holding and handling may be affected with the "Temporary Spare" in use. Do not exceed 50 mph (80 km/h). Do not drive farther than 50 miles (80 km) on a temporary spare tire.

CAUTION:
The car must not be driven with wheels of different dimensions or with a spare tire other than the one that came with the car. The use of different size wheels can seriously damage your car's transmission.

NOTE: Certain models may be equipped with a full-size spare tire. When used, it should be inflated to the same pressure as the tire it is replacing.

*Please note that the tire information label indicates pressure for both comfort and fuel economy.

pg. 111 Wheels and tires

Uniform tire quality grading

ALL PASSENGER CAR TIRES MUST CONFORM TO FEDERAL SAFETY REQUIREMENTS IN ADDITION TO THESE GRADES

Quality grades can be found, where applicable, on the tire sidewall between the tread shoulder and maximum section width. For example:

Treadwear 200 Traction AA Temperature A

TREADWEAR

The treadwear grade is a comparative rating based on the wear rate of the tire when tested under controlled conditions on a specified government test course. For example, a tire graded 150 would wear one and one half (1 1/2) times as well on the government course as a tire graded 100. The relative performance of tires depends upon the actual conditions of their use, however, and many depart significantly from the norm due to variation in driving habits, service practices and differences in road characteristics and climate.

TRACTION

The traction grades, from highest to lowest, are AA, A, B, and C, as measured under controlled conditions on specified government test surfaces of asphalt and concrete. A tire marked C may have poor traction performance.

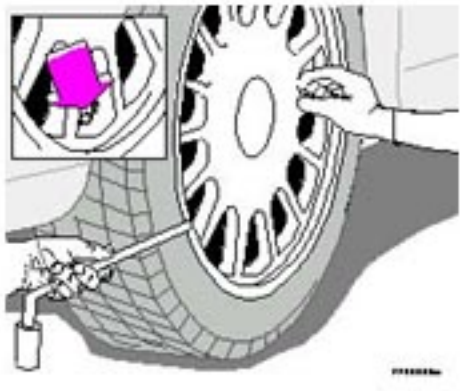
WARNING!
The traction grade assigned to this tire is based on braking (straight-ahead) traction tests and is not a measure of cornering (turning) traction.

TEMPERATURE

The temperature grades are AA (the highest), A, B, and C, representing the tire's resistance to the generation of heat and its ability to dissipate heat when tested under controlled conditions on a specified indoor laboratory test wheel. Sustained high temperature can cause the material of the tire to degenerate and reduce tire life, and excessive temperature can lead to sudden tire failure. The grade C corresponds to a minimum level of performance which all passenger car tires must meet under the Federal Motor Safety Standard No. 109. Grades B and A represent higher levels of performance on the laboratory test wheel than the minimum required by law.

WARNING!
The temperature grade for this tire is established for a tire that is properly inflated and not overloaded. Excessive speed, under-inflation, or excessive loading, either separately or in combination, can cause heat buildup and possible tire failure.

pg. 112 Changing wheels



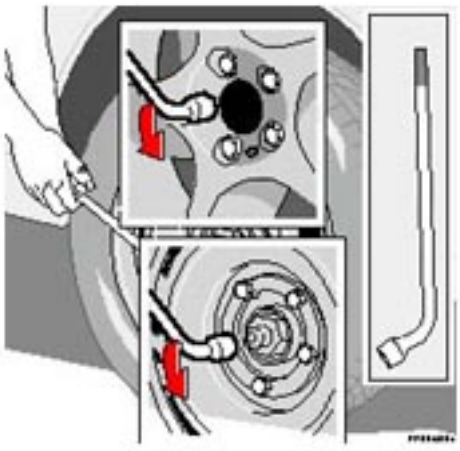
Insert flat end of lug wrench and turn/pull straight out

Changing wheels

The spare wheel is located under the carpet on the cargo area floor. The jack and crank are secured in the wheel recess. There are two jack attachment points on each side of the car.

To change a wheel:

- Engage the parking brake.
- Put the gear selector in (P)ark.
- Remove the wheel cap (where applicable) using the lug wrench in the tool kit.
- With the car still on the ground, use the lug wrench to loosen the wheel bolts 1/2 - 1 turn by exerting downward pressure. Turn the bolts counterclockwise to loosen.



Loosen wheel bolts

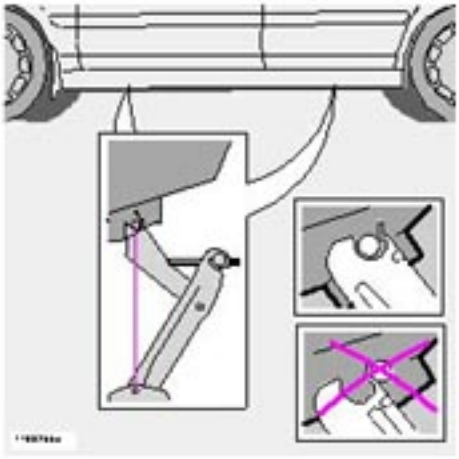
- Position the jack on the bar in the attachment (A in the illustration in right column) and crank while simultaneously guiding the base of the jack to the ground. **The base of the jack must be flat on a level, firm, non-slippery surface. Before raising the car, check that the jack is still correctly positioned in the attachment.**
- Raise the vehicle until the wheel to be changed is lifted off the ground.
- Unscrew the wheel bolts completely and carefully remove the wheel so as not to damage the thread on the studs.

NOTE: See also page 133 for hoisting the vehicle on a garage lift!

WARNING!

- The jack must correctly engage the bar in the jack attachment (A). The car's weight must not rest on the jack attachment (B). See illustration on page 113.
- Be sure the jack is on a firm, level, non-slippery surface.
- Never allow any part of your body to be extended under a car supported by a jack.
- Use the jack intended for the car when replacing a wheel. For any other job, use stands to support the side of the car being worked on.
- Apply the parking brake and put the gear selector in the (P)ark position.
- Block the wheels standing on the ground, use rigid wooden blocks.

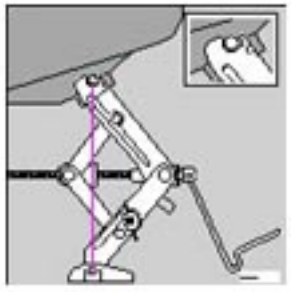
pg. 113 Wheels and tires



Attaching the jack

NOTE: To avoid excessive wear and the necessity of rebalancing, mark and reinstall wheels in the same location and position as before removal. To lessen the chance of imbalance, each wheel hub is equipped with a guide stud to ensure that a removed wheel can be reinstalled in its original position (as when changing over to winter tires/wheels).

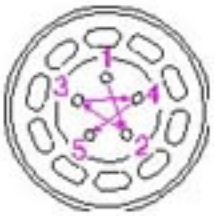
NOTE: Refer to page 133 for hoisting the vehicle on a garage lift.



Jack for AWD models

CAUTION:

- The car must not be driven with wheels of different dimensions or with a spare tire other than the one that came with the car. The use of different size wheels can seriously damage your car's transmission.
- Correct tightening torque on wheel bolts must be observed. The wheel bolts should never be greased or lubricated. The extended, chromed wheel bolts must not be used with steel rims, as they make it impossible to fit the hub caps.



Correct tightening order for wheel bolts

Installing the wheel

- Clean the contact surfaces on the wheel and hub.
- Lift the wheel and place it on the hub. Make sure that you align the wheel with the guide stud on the wheel hub prior to installation.
- Install the wheel bolts and tighten hand-tight. Using the lug wrench, tighten crosswise (see illustration above) until all bolts are snug.
- Lower the vehicle to the ground and alternately tighten the bolts crosswise to 100 ft. lbs. (136 Nm).
- Install the wheel cap (where applicable).

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2003 VOLVO V70

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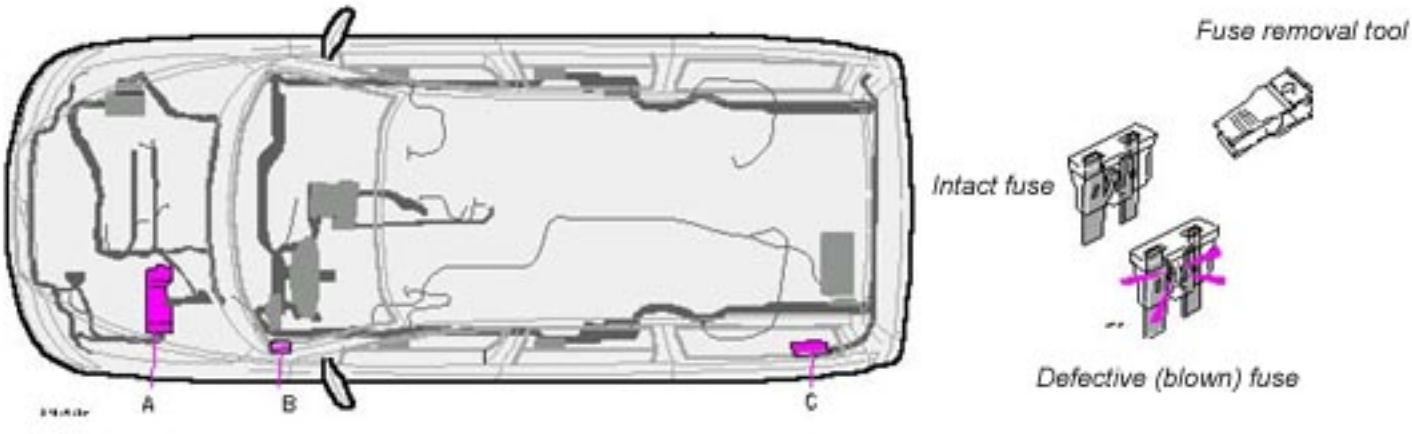
pg. 116 Fuses



Replacing fuses

If an electrical component fails to function, it is possible that a fuse has blown due to a temporary circuit overload.

Fuses are located in different places:

A - Relays/fuse box in the engine compartment
B - Fuse box in the passenger compartment
C - Relays/fuse box in the cargo area

A label on the inside of each cover indicates the amperage and the electrical components that are connected to each fuse.

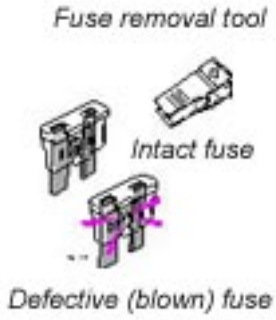
The easiest way to see if a fuse is blown is to remove it. Pull the fuse straight out. If a fuse is difficult to remove, you will find a special fuse removal tool in the passenger compartment fuse box. From the side, examine the curved metal wire to see if it is broken. If so, put in a new fuse of the **same color and amperage** (written on the fuse). Spare fuses are stored in the fuse box in the passenger compartment. If fuses burn out repeatedly, have the electrical system inspected by an authorized Volvo retailer.

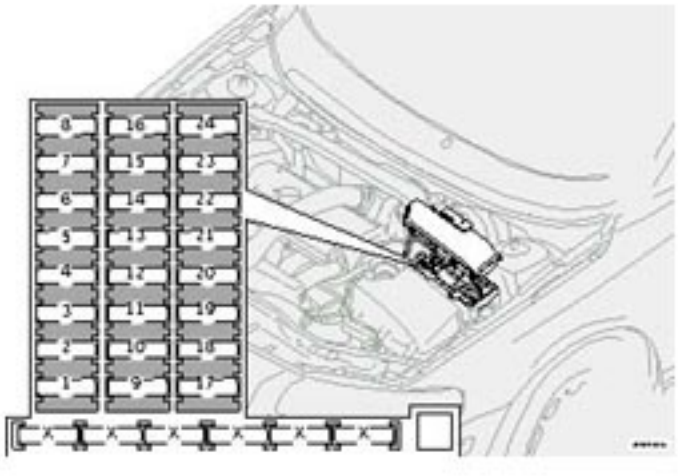
WARNING!
Never use fuses with higher amperage that those stated on the following pages. Doing so could overload the car's electrical system.

pg. 117 Fuses in the engine compartment

Relays/fuses in the engine compartment

When replacing fuses, be sure to replace a blown fuse with a new one of the **same color and amperage** (written on the fuse). Fuse amperage is also indicated on the inside of the fuse box cover.





A - To open, press the plastic catches on the rear side of the fuse box cover and lift

Ordinary fuses

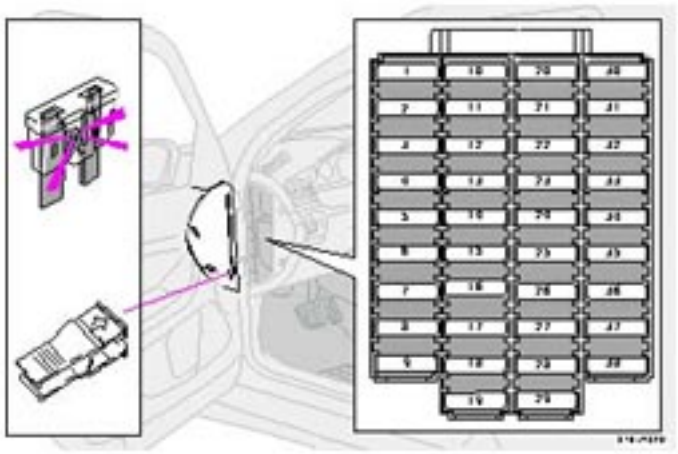
Location	Amperage
1 Accessories	25A
2 Auxiliary lamps (option)	20A
3 Vacuum pump	15A
4 Oxygen sensors	20A
5 Crankcase ventilation heater, solenoid valves	10A
6 Mass airflow sensor, engine control module, injectors	15A
7 Throttle module	10A

8 AC compressor, accelerator pedal position sensor, E-box fan	10A
9 Horn	15A
10 Tailgate wiper	10A
11 AC compressor, ignition coils	20A
12 Brake light switch	5A
13 Windshield wipers	25A
14 ABS/STC/DSTC	30A
15 -	
16 Windshield washers, headlight wiper/washers (certain models)	15A
17 Low beam, right	10A
18 Low beam, left	10A
19 ABS/STC/DSTC	30A
20 High beam, left	15A
21 High beam, right	15A
22 Starter motor	25A
23 Engine control module	5A
24 -	

pg. 118 Fuses in the passenger compartment

Fuse box in the passenger compartment

This fuse box is located at the far left side of the instrument panel. Extra fuses and the fuse removal tool are also stored here. When replacing a blown fuse, be sure to replace it with a new one of the **same color and amperage** (written on the fuse).



Location	Amperage
1 Low beam headlights	15A
2 High beam headlights	20A
3 Power driver's seat	30A
4 Power passenger's seat	30A
5 -	
6 -	
7 Heated seat - front left (option)	15A
8 Heated seat - front right (option)	15A
9 ABS/STC/DSTC	5A
10 -	
11 -	
12 Headlight wipers (certain models)	15A
13 Electric socket 12 V	15A
14 Power passenger's seat	5A
15 Audio system, VNS	5A
16 Audio system	20A
17 Audio amplifier	30A
18 Front fog lights	15A
19 VNS display	10A
20 -	
21 Automatic transmission, shiftlock, extended D2 feed	10A
22 Direction indicators	20A
23 Headlight switch module, climate control system, onboard diagnostic connector, steering wheel lever modules	5A

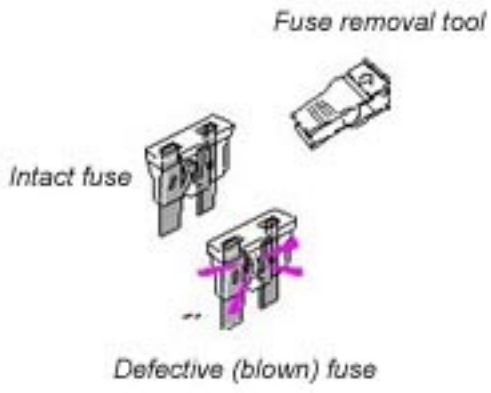
24 Relay for extended D1 feed: climate control system, power driver's seat, driver's info	10A
25 Ignition switch, relay starter motor, SRS, engine control module	10A
26 Climate control system blower	30A
27 -	
28 Electronic module - courtesy lighting	10A
29 -	
30 Left front/rear parking lights	7.5A
31 Right front/rear parking lights, license plate lights	7.5A
32 Central electrical module, vanity mirror lighting, power steering, glove compartment light, interior courtesy lighting	10A
33 Fuel pump	15A
34 Power sun roof	15A
35 Central locking system, power windows - left door mirror	25A
36 Central locking system, power windows - right door mirror	25A
37 Rear power windows, power child safety	30A
38 Alarm siren	5A

* Please be aware that if this fuse is not intact, or if it is removed, the alarm will sound.

pg. 119 Fuses in the cargo area

Fuses in the cargo area

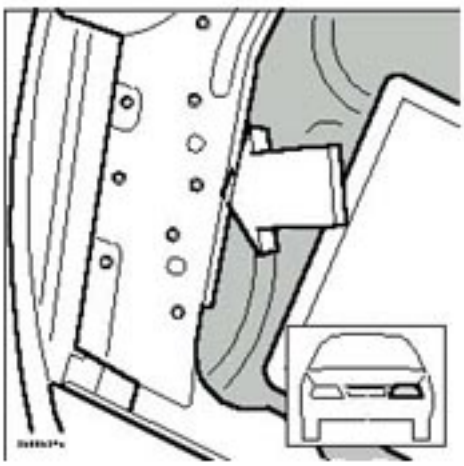
The fuses in the cargo area are located on the trim on the left-hand side. When replacing a blown fuse, be sure to replace it with a new one of the same color and amperage (written on the fuse).



Ordinary fuses

Location	Amperage
1 Rear electrical module, cargo area lighting	10A
2 Rear fog light	10A
3 Brake lights	15A
4 Backup lights	10A
5 Rear window defroster, relay 15I - accessories	5A
6 Unlocking tailgate	10A
7 Auxiliary 12 volt socket in cargo area (option)	15A
8 Central locking rear doors/fuel filler door	20A
9 Trailer (30 feed)	15A
10 CD changer, VNS	10A
11 Accessory control module (AEM)	15A
12 Tailgate wiper	15A
13 Loudspeaker (subwoofer) cargo area - option	15A
14 Brake lights	7.5A
15 Trailer (15I feed)	20A
16 -	
17 All Wheel Drive control module	7.5A
18 -	

pg. 120 Replacing bulbs

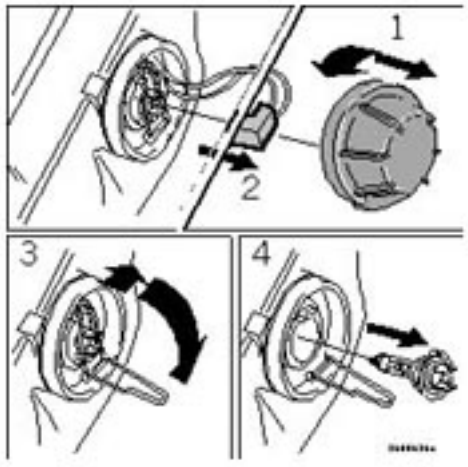


Replacing high/low beam headlight bulbs

The headlight bulbs must be replaced from the engine compartment.

CAUTION:

- Do not touch the glass on halogen bulbs with your fingers. Grease, oil or any other impurities can be carbonized onto the bulb and cause damage to the reflector.
- Be sure to use bulbs of the correct type and voltage.

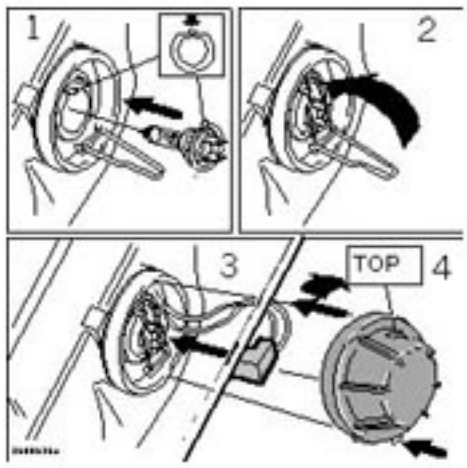


Removing a defective bulb

To remove a defective low beam bulb:

- Switch off all lights and turn the ignition switch to position 0.
- Open the hood.
- Remove the plastic cover over the bulb (1) by turning it counterclockwise.

- Remove the connector (2).
- Loosen the retaining spring (3) by first moving it to the right and then moving it down, out of the way.
- Pull out the defective bulb. Note the position of the guide lug on the base of the bulb (4).



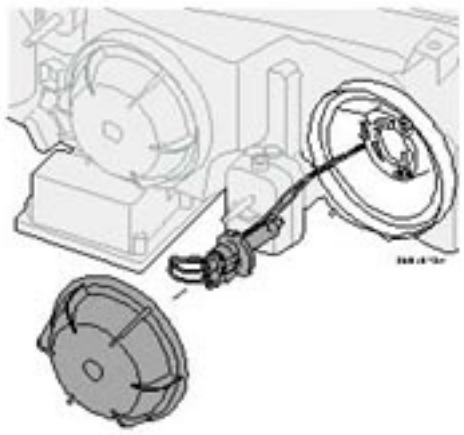
Installing a new bulb

To install a new low beam bulb (H7):

- Insert the new bulb, without touching the glass, with the guide lug upward (1). The bulb will only seat properly in this position.
- Move the retaining spring up and push it slightly to the left until it seats properly (2).
- Press the connector into place on the bulb (3).
- Reinstall the plastic cover and turn it clockwise until it is correctly in place (4). "TOP" must be upward.

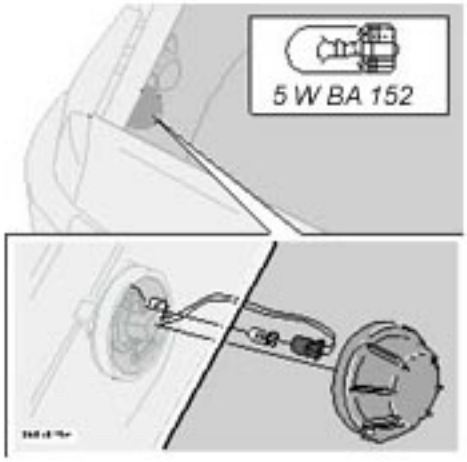
NOTE: If the vertical aim of your headlights needs to be adjusted for any reason (e.g., towing a trailer for extended periods), this should be done by an authorized Volvo retailer.

pg. 121 Replacing bulbs



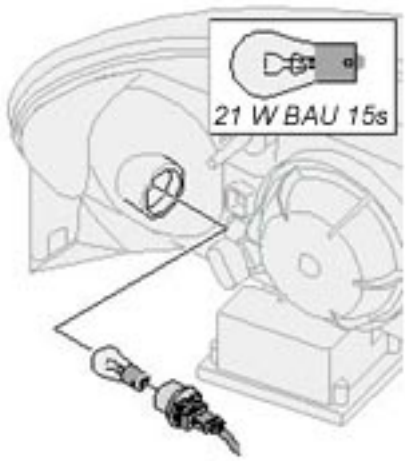
To remove and install a high beam bulb (HB3):

- Switch off all lights and turn the ignition switch to position 0.
- Open the hood.
- Remove the cover by twisting it counterclockwise.
- Twist the bulb holder counterclockwise, pull it out and fit a new bulb. Note its position.
- Refit the bulb holder. It can only be fitted in one way.
- Screw the cover back on. The word TOP should be upwards.



Replacement of front parking light bulb

- Switch off all lights and turn ignition key to position 0.
- Remove the low beam cover by twisting counterclockwise.
- Pull out the bulb and its socket. Replace bulb.
- Press the bulb and its socket back into place.
- Check that the new bulb lights.
- Screw the cover back into place, "TOP" should be upwards!



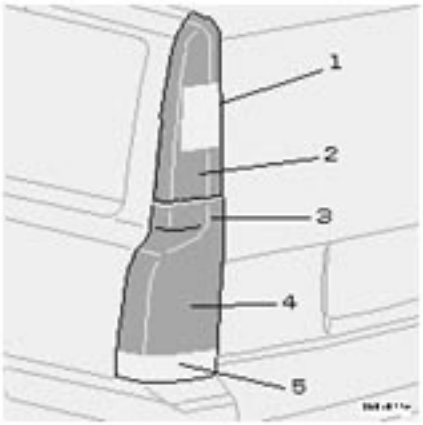
Changing the bulb in the turn signals at the front corners

- Switch off all lights and turn ignition key to position 0.
- Pull out the bulb and its socket by twisting counterclockwise. Replace bulb.
- Press the bulb and its socket back into place.
- Check that the new bulb lights.

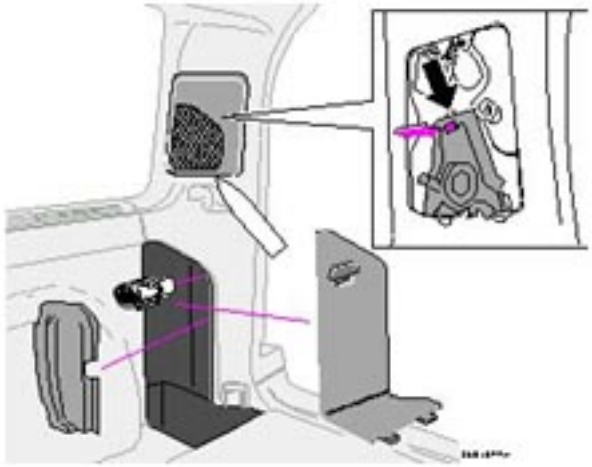
pg. 122 Replacing bulbs

Replacement of bulbs in backup light, rear parking lights and rear fog lights

- Switch off all lights and turn the ignition switch to position 0.
- Open the access panel.
- Remove the sound insulation behind it.
- Twist the bulb holder counterclockwise and remove it.
- Press the bulb inward, twist it counterclockwise and extract it.
- Fit a new bulb.
- Fit the bulb holder in place and twist it clockwise.
- Refit the sound insulation and put the access panel back in place.



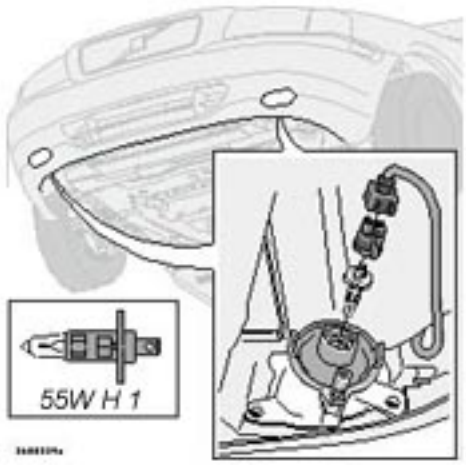
1. Rear turn signals	21 W BAU 15 s
2. Brake light	21 W BA 15 s
3. Rear parking lights	5 W BA 15 s
4. Rear fog light (left side only) and rear parking lights	21W/4W BAY 15 d
5. Backup light	21 W BA 15 s



Replacement of rear turn signal and brake light bulbs

- Switch off all lights and turn the ignition switch to position 0.
- Using a screwdriver, carefully pry off the speaker grille.
- Pull out the red tab in the speaker.
- Then press on the black pin above the extracted red tab and twist out the speaker.
- Twist the bulb holder counter-clockwise, and withdraw it.
- Fit a new bulb.
- Fit the bulb holder in place and twist it clockwise.
- Refit the speaker and press in the red tab.
- Press the speaker grille back into position.

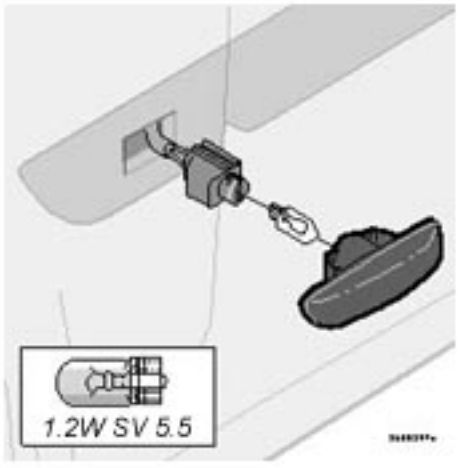
pg. 123 Replacing bulbs



Front fog lights (option)

CAUTION:
Avoid touching the glass on the bulb with your fingers.

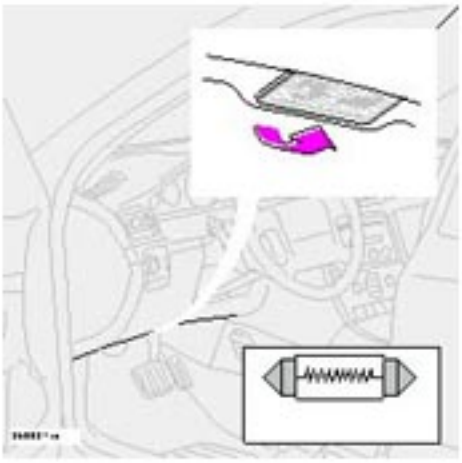
- Switch off all lights and turn the ignition key to position 0.
- Turn the bulb holder slightly counterclockwise to release it.
- Replace the bulb. The shape of the base of the bulb corresponds to the shape of the bulb holder.
- Reinstall the bulb holder by turning it slightly clockwise. "TOP" on the holder should be upward.



Side direction indicator

- Open the front door halfway.
- From the inside of the fender, push the lamp housing out.

- Turn the bulb holder 1/4 turn counterclockwise and pull it out from the lens.
- Remove the defective bulb by pulling it straight out.
- Insert a new bulb.
- Reinsert the bulb holder in the lens and press the entire unit back into place on the fender.

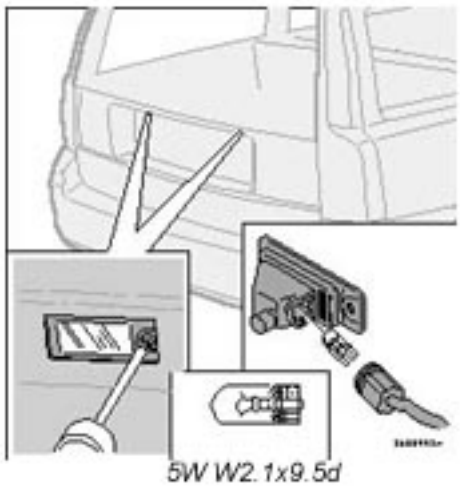


Door step courtesy lights

The door step courtesy lights are located under the dash on the driver's and passenger's sides.
To replace a bulb:

- Carefully insert a screwdriver and pry out the lens.
- Replace the defective bulb.
- Reinstall the lens.

pg. 124 Replacing bulbs



License plate lights

- Switch off the ignition.
- Loosen the screws with a Torx screwdriver.
- Carefully pull out the lamp housing.
- Turn the bulb holder counterclockwise and pull it out.
- Pull out the defective bulb and insert a new one.
- Reinsert the bulb holder into the housing and turn it clockwise.
- Reinstall the housing and screw it in place.

Vanity mirror lights

- Carefully insert a screwdriver and pry out the lens.
- Pry out the defective bulb and replace it.
- Carefully press the lower edge of lens onto the four tabs and press the upper edge of the lens into place.

Front courtesy lights

These bulbs may be difficult for you to replace yourself. We recommend that you let an authorized

Volvo retailer replace these bulbs if necessary.

pg. 125 Replacing bulbs

Rear reading lights

These bulbs may be difficult for you to replace yourself. We recommend that you let an authorized Volvo retailer replace these bulbs if necessary.

NOTE: Other bulbs may be difficult for you to replace yourself. Let an authorized Volvo retailer replace these bulbs if necessary.

pg. 126 Paint touch up

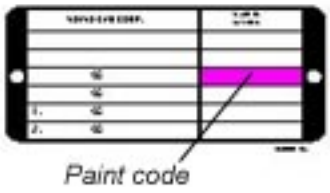
Paint touch-up

Paint damage requires immediate attention to avoid rusting. Make it a habit to check the finish regularly - when washing the car for instance. Touch-up if necessary.

Paint repairs require special equipment and skill. Contact your Volvo retailer for any extensive damage.

Minor scratches can be repaired by using Volvo touch-up paint.

NOTE: When ordering touch-up paint from your Volvo retailer, use the paint code indicated on the model plate. The plate is located in the engine compartment.



Minor stone chips and scratches

Material:
Primer - can
Paint - touch-up bottle
Brush
Masking tape

NOTE: When touching up the car, it should be clean and dry. The surface temperature should be above 60° F (15° C).

Minor scratches on the surface

If the stone chip has not penetrated down to the metal and an undamaged layer of paint remains, the touch-up paint can be applied as soon as the spot has been cleaned.

Deep scratches

1. Place a strip of masking tape over the damaged surface. Pull the tape off so that any loose flakes of paint adhere to it.

2. Thoroughly mix the primer and apply it with a small brush.
When the primer surface is dry, the paint can be applied using a brush. Mix the paint thoroughly; apply

several thin paint coats and let dry after each application.

3. If there is a longer scratch, you may want to protect surrounding paint by masking it off.

pg. 127 Washing the car

Washing the car

- The car should be washed at regular intervals since dirt, dust, insects and tar spots adhere to the paint and may cause damage. It is particularly important to wash the car frequently in the wintertime to prevent corrosion, when salt has been used on the roads.
- When washing the car, do not expose it to direct sunlight. Use lukewarm water to soften the dirt before you wash with a sponge and plenty of water, to avoid scratching.
- **Bird droppings**: Remove from paintwork as soon as possible. Otherwise the finish may be permanently damaged.
- A detergent can be used to facilitate the softening of dirt and oil.
- A water-soluble grease solvent may be used in cases of sticky dirt. However, use a wash place equipped with a drainage separator.
- Remove dirt from the drain holes in the doors and rocker panels.
- Dry the car with a clean chamois.
- Tar spots can be removed with kerosene or tar remover after the car has been washed.
- A stiff-bristle brush and lukewarm soapy water can be used to clean the wiper blades. Frequent cleaning improves visibility considerably.
- Wash off the dirt from the underside (wheel housings, fenders, etc.).
- In areas of high industrial fallout, more frequent washing is recommended.

CAUTION:
During high pressure washing, the spray mouthpiece must never be closer to the vehicle than 13" (30 cm). Do not spray into the locks.
Special sun roof cautions:
- Always close the sun roof and sun shade before washing your vehicle.
- Never use abrasive cleaning agents on the sun roof.
- Never use wax on the rubber seals around the sun roof.

- When washing or steam cleaning the engine, avoid spraying water or steam directly on the electrical components or toward the rear side of the engine.
- After cleaning the engine, the spark plug wells should be inspected for water and blown dry if necessary.

Suitable detergents: Special car washing detergents should be used. Mix according to manufacturer's instructions.

Bumpers: The bumpers are painted. Wash the bumpers with the same cleaning agent used on the rest of the car. Never clean the bumpers with gasoline or paint thinner. Difficult spots can be removed with denatured alcohol. To avoid scratches, do not dry the bumpers with paper.

WARNING!

- When the car is driven immediately after being washed, apply the brakes several times in order to remove any moisture from the brake linings.
- Engine cleaning agents should not be used when the engine is warm. This constitutes a fire risk.

pg. 128 Washing the car, Cleaning the upholstery

Automatic washing - simple and quick

- **We do NOT recommend washing your car in an automatic wash during the first six months (because the paint will not have hardened sufficiently).**
- An automatic wash is a simple and quick way to clean your car, but it is worth remembering that it may not be as thorough as when you yourself go over the car with sponge and water. Keeping the underbody clean is most important, especially in the winter. Some automatic washers do not have facilities for washing the underbody.
- Before driving into an automatic wash, make sure that side view mirrors, auxiliary lamps, etc, are secure, otherwise there is risk of the machine dislodging them.

Polishing and waxing

- Normally, polishing is not required during the first year after delivery. However, waxing may be beneficial.
- Before applying polish or wax the car must be washed and dried. Tar spots can be removed with kerosene or tar remover. Difficult spots may require a fine rubbing compound.
- After polishing, use liquid or paste wax.
- Several commercially available products contain both polish and wax.
- Waxing alone does not substitute for polishing of a dull surface.
- A wide range of polymer-based car waxes can be purchased today. These waxes are easy to use and produce a long-lasting, high-gloss finish that protects the bodywork against oxidation, road dirt and fading.

- Do not polish or wax your car in direct sunlight (the surface of the car should not be warmer than 113° F (45° C).

Cleaning the upholstery

- The **fabric** can be cleaned with soapy water or a detergent. For more difficult spots caused by oil, ice cream, shoe polish, grease, etc., use a clothing/fabric stain remover.
- The **plastic** in the upholstery can be cleaned with a soft cloth and mild soap solution.
- **Leather upholstery/suede-like upholstery (alcantera^{TM})** can be cleaned with a soft cloth and mild soap solution. For more difficult spots, Volvo offers a leather care kit.
- **Under no circumstances should gasoline, naphtha or similar cleaning agents be used on the plastic or the leather since these can cause damage.**

Cleaning the seat belts

Clean only with lukewarm water and mild soap solution.

Cleaning floor mats

The floor mats should be vacuumed or brushed clean regularly, especially during winter, when they should be taken out for drying. Spots on textile mats can be removed with a mild detergent.

Stain removal

- Take extra care when removing stains such as ink or lipstick since the coloring can spread.
- Use solvents sparingly. Too much solvent can damage the seat padding.
- Start from the outside of the stain and work toward the center.

pg. 129 Maintenance service, Warranty

Maintenance service

Volvo advises you to follow the service program outlined in the Warranty and Service Records Information booklet. This maintenance program contains inspections and services necessary for the proper function of your car. The maintenance services contain several checks which require special instruments and tools and therefore must be performed by a qualified technician. To keep your Volvo in top condition, specify time-tested and proven Genuine Volvo Parts and Accessories.

The Federal Clean Air Act - U.S.

The Federal Clean Air Act requires vehicle manufacturers to furnish written instructions to the ultimate purchaser to assure the proper servicing and function of the components that control emissions. These services, which are listed in the "Warranty and Service Records Information booklet," are not covered by the warranty. You will be required to pay for labor and material used.

Maintenance services

Your Volvo passed several major inspections before it was delivered to you, in accordance with Volvo specifications. The maintenance services outlined in the Warranty and Service Records Information booklet, many of which will positively affect your vehicle's emissions, should be performed as indicated. It is recommended that receipts for vehicle emission services be retained in case questions arise concerning maintenance.

Inspection and service should also be performed anytime a malfunction is observed or suspected.

Page 128 provides information about maintenance of emission-related components.

Applicable warranties - U.S.

In accordance with applicable U.S. and Canadian regulations, the following list of warranties is provided.

- New Car Limited Warranty
- Parts and Accessories Limited Warranty
- Corrosion Protection Limited Warranty
- Seat Belt and Supplemental Restraint Systems Limited Warranty
- Emission Design and Defect Warranty
- Emission Performance Warranty

These are the Federal warranties; other warranties are provided as required by state/provincial law. Refer to your separate Warranty and Service Records Information booklet for detailed information concerning each of the warranties.

pg. 130 Fuel/emissions systems

Fuel system

The fuel system continually compensates for variation in engine load, speed and temperature. A mass air flow sensor continuously measures the inducted air and makes rapid adjustments for changes in air temperature and density, to balance fuel economy, emissions, and engine power requirements.

Heated oxygen sensor

This is an emission control system designed to reduce emissions and improve fuel economy. The heated oxygen sensor monitors the composition of the exhaust gases leaving the engine. The exhaust gas analysis is fed into an electronic module. This adjusts the air/fuel ratio to improve combustion and reduce the three major pollutants (hydrocarbons, carbon monoxide, and oxides of nitrogen (NOx)) via a three-way catalytic converter.

Crankcase ventilation

The engine is provided with positive crankcase ventilation which prevents crankcase gases from being released into the atmosphere. Instead, the crankcase gases are routed to the intake manifold and cylinders.

Prem-Air®

On the surface of the radiator in the engine compartment, there is a special coating called Prem-Air®. Prem-Air® works as a catalytic converter, converting most of the ozone passing through the radiator into oxygen, thereby reducing harmful ground-level ozone.

Evaporative control system

The car is equipped with an evaporative control system, which prevents gasoline vapor from being released into the atmosphere.
The system consists of a fuel tank with filler pipe and cap, two rollover valves, a Fill Limit Vent Valve (FLVV), vapor vent lines, a charcoal canister, a purge line, and a purge control valve and engine connections. In addition, there is a pressure sensor connected to the fuel tank and a filter-protected Canister Close Valve (CCV) on the atmospheric side of the canister, for system diagnosis.
The gasoline vapor is channeled through the rollover valves and the FLVV via the vapor vent lines into the charcoal canister, where it is stored. When the engine is started, the gasoline vapor is drawn from the

charcoal canister to the engine's air intake system and into the combustion process.

NOTE:

- Overfilling the fuel tank can cause damage to the evaporative control system.
- If the fuel filler cap is not closed tightly or if the engine is running when the car is refueled, the Malfunction Indicator Lamp may indicate a fault.
- During a transitional period, a small number of service stations may still have fuel nozzles that are not compatible with the fuel filler neck on cars equipped with the evaporative emission control system mandated by the U.S. Environmental Protection Agency and the California Air Resources Board. If you experience difficulties in refueling your vehicle, please ask the gas station attendant for assistance.

CAUTION:
Fuel must not be siphoned from the fuel tank. This will damage the evaporative control system.

pg. 131 Drive belt, Coolant

Belt check

Check the belt regularly to make sure it is in good condition and is clean. A worn or dirty belt can cause poor cooling and low alternator output as well as impair the operation of the power steering and the air conditioning unit.

NOTE: The drive belt is equipped with a self-tensioning mechanism and requires no adjustment between changes.

WARNING!
The engine must not be running when this check is performed.

Check coolant level

The cooling system must be filled with coolant and not leak to operate at maximum efficiency. Check the coolant level regularly. The level should be between the "MAX" and "MIN" marks on the expansion tank. The check should be made with particular thoroughness when the engine is new or when the cooling system has been drained. Do not remove the filler cap other than for topping up with coolant. Frequent removal may prevent coolant circulation between the engine and the expansion tank during

engine warm up and cooling.

Changing coolant

Normally, the coolant does not need to be changed. If the system must be drained, consult your Volvo retailer.

NOTE: Do not top off with water only. This reduces the rust-protective and antifreeze qualities of the coolant and has a lower boiling point. It can also cause damage to the cooling system if it should freeze. Top off with Volvo Genuine Coolant/Antifreeze only.

CAUTION:
The cooling system must always be kept filled to the correct level. If it is not kept filled, there can be high local temperatures in the engine which could result in damage. Different types of antifreeze/coolant may not be mixed.

WARNING!
Never remove the radiator cap while the engine is warm. Wait until the car cools.

pg. 132 Emissions maintenance

Periodic maintenance helps minimize emissions

Periodic maintenance will help keep your vehicle running well. Your Warranty and Service Records Information booklet provides a comprehensive periodic maintenance schedule up to 150,000 miles (240,000 km) of vehicle service. The schedule includes components that affect vehicle emissions. This page describes some of the emission-related components.

Engine air filter

The engine air filter cleans particles from air entering the engine. Replace the engine air filter cartridge with a new one every 37,500 miles (60,000 km) under normal driving conditions. Replace the cartridge

more often when the vehicle is driven under dirty and dusty conditions. The cartridge cannot be cleaned, and should always be replaced with a new one.

Fuel filter

The fuel filter should be replaced at 105,000 miles (168,000 km) or at 120,000 miles (193,000 km) for the 2.5T engine on AWD models. The filter is replaced as a complete unit. Replace more frequently if contaminated fuel is introduced into the tank, or if there is reason to suspect that this has occurred.

Fuel system, including filler cap, tank and lines and connections

The ability of the fuel system to contain hydrocarbons depends upon a leak-free system. Inspect fuel lines every 30,000 miles (48,000 km).Check for proper sealing of the fuel filler cap which contains "O" ring seals.

NOTE: If the fuel filler cap is not closed tightly or if the engine is running when the car is refueled, the Check Engine light (Malfunction indicator) may indicate a fault. However, your vehicle's performance will not be affected. Use only Volvo original or approved fuel filler caps.

Timing belt

For proper functioning of the vehicle and its emission control systems, the timing belt and belt tensioner must be replaced every 105,000 miles (168,000 km) or at 120,000 miles (193,000 km) for the 2.5T engine on AWD models. Engine damage will occur if the belt fails.

PCV system

(on turbocharged models)
The nipple in the intake manifold and the filter at the end of the PCV hose in the air cleaner should be inspected and cleaned at 105,000 miles (168,000 km) and thereafter, again at 150,000 mile (240,000 km) intervals.

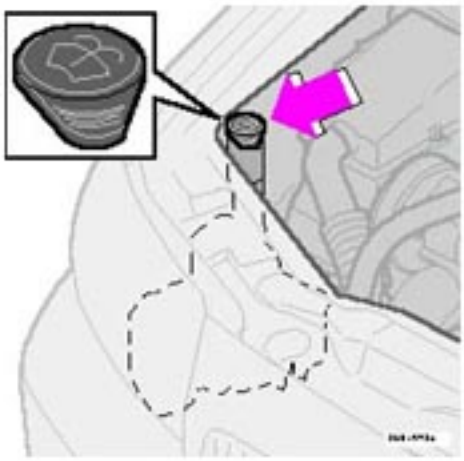
Spark plugs

The spark plugs should be replaced every 60,000 miles (96,000 km) under normal driving conditions. City driving or fast highway driving may necessitate replacement sooner.

Under normal driving conditions, spark plugs require no maintenance between replacement intervals.

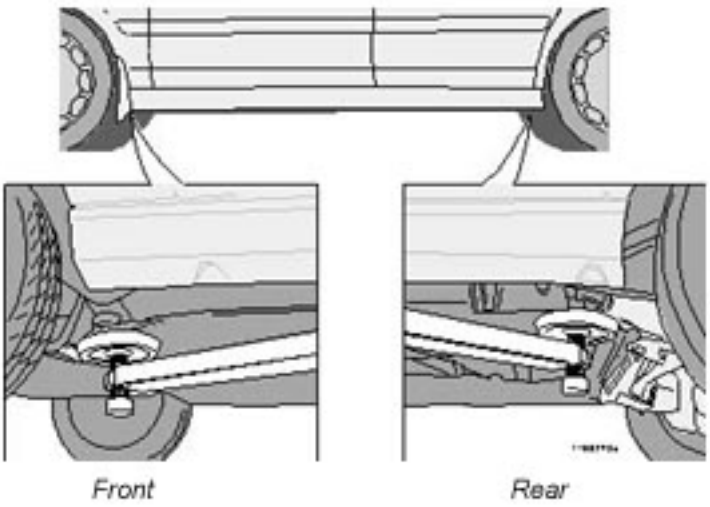
When installing new plugs, be sure to use the right type and to tighten them correctly. When changing the plugs, clean the terminals and rubber seals. Also check that the suppressor connectors are in good condition. Cracked or damaged connectors should be replaced.

pg. 133 Servicing



Washer fluid reservoir

The washer fluid reservoir is located in the engine compartment and holds approx. 4.7 US qts. (4.5 liters).
During cold weather, the reservoir should be filled with windshield washer solvent containing antifreeze.

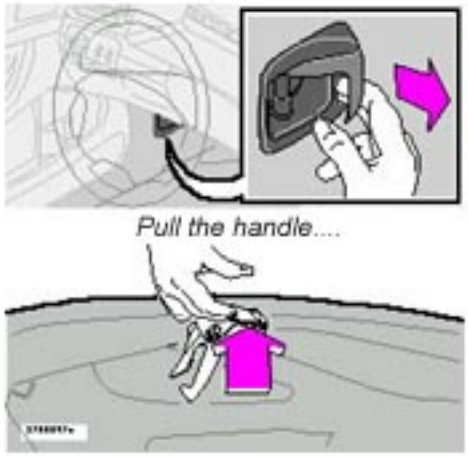


Hoisting the car

If a garage jack is used to lift the car, the two jack attachments points should be used. They are specially

reinforced to bear the weight of the car. A garage jack can also be placed under the front of the engine support frame. Take care not to damage the splash guard under the engine. **Ensure that the jack is positioned so that the car cannot slide off it. Always use axle stands or similar structures.**
If a two-post hoist is used to lift the car, the front and rear lift arm pads should be centered under the reinforced lift plates on the inboard edge of the sill rail (see illustration above).

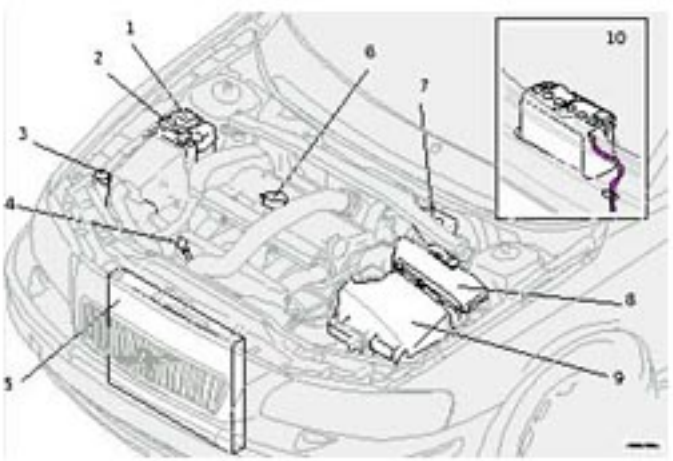
pg. 134 Opening the hood, Engine compartment



Opening the hood

- Pull the lever located under the left side of the dash to release the hood lock.
- Lift the hood slightly.
- Press up the release control located under the front edge of the hood (at the center) and lift.

WARNING!
Check that the hood locks properly when closed.



Engine compartment

1 Expansion tank - coolant
2 Power steering fluid reservoir
3 Washer fluid reservoir
4 Dipstick - engine oil
5 Radiator/cooling fan
6 Oil filler cap - engine
7 Brake fluid reservoir
8 Relay/fuse box
9 Air cleaner
10 Battery (in the cargo compartment)

WARNING!
The cooling fan may start or continue to operate (for up to 6 minutes) after the engine has been switched off.

pg. 135 Engine oil

Oil quality

Meeting minimum ILSAC specification GF-2, including ACEA A1, API SJ, SJ/CF and SJ/Energy Conserving. Your Volvo has been certified to standards using ILSAC oil specification GF-2 5W/30. Volvo recommends use of oil with a quality rating equal to or higher than ILSAC GF-2. Equivalent and better oils include ACEA A1, API SJ, SJ/CF, and SJ/Energy conserving. Lower quality oils may not offer the same fuel economy, engine performance, or engine protection.

Volvo Cars recommends Castrol.
Depending on your driving habits, premium or synthetic oils may provide superior fuel economy and engine protection. Consult your Volvo retailer for recommendations on premium or synthetic oils.

Oil additives must not be used.

NOTE: Synthetic oil is not used when the oil is changed at the normal maintenance services. This oil is only used at customer request, at additional charge. Please consult your Volvo retailer.

Oil viscosity (stable ambient temperatures)

Operation in temperate climates
Incorrect viscosity oil can shorten engine life. Under normal use when temperatures do not exceed 86 °F (30°C), SAE 5W/30 will provide good fuel economy and engine protection. See the viscosity chart below.

Operation in hot climates
When temperatures exceed 86 °F (30°C) in your area, Volvo recommends, for the protection of your engine, that you use a heavier weight oil, such as SAE 10W/30. See the viscosity chart below.

Extreme engine operation
Synthetic oils meeting SAE 10W/30 and complying with oil quality requirements are recommended for driving in areas of sustained temperature extremes (hot or cold), when towing a trailer over long distances, and for prolonged driving in mountainous areas.

Changing oil and oil filter

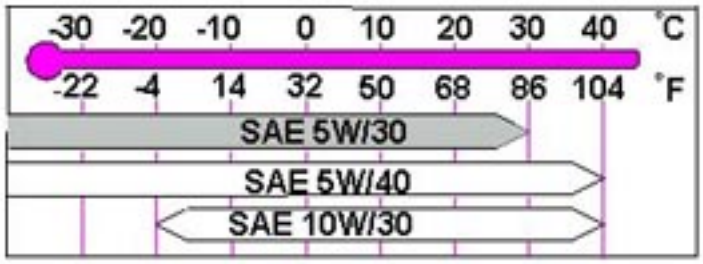
Oil and oil filter changes should be made at 7,500 mile (12,000 km) intervals.

The API Service Symbol

The API Service Symbol "donut" is divided into three parts:

- The top half describes the oil's performance level.
- The center identifies the oil's viscosity.
- The bottom half tells whether the oil has demonstrated energy-conserving proper ties in a standard test in comparison to a reference oil.

Viscosity (stable ambient temperatures)



Break-in Period
Although some oil consumption occurs during normal engine operation, more oil is consumed when the engine is new as the internal parts generate higher friction while wearing-in each other. **From the time the engine is new until the first service is performed, the oil consumption could be higher than normal. For this reason, it is especially important to check the oil every time you refuel you car during this period.**

pg. 136 Engine oil

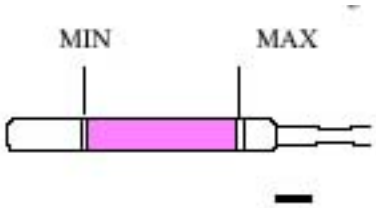
Checking the oil level

The oil level should be checked every time the car is refueled. This is especially important during the period up to the first service.

CAUTION:
Not checking the oil level regularly can result in serious engine damage if the oil level becomes too low.

Park the car on a level surface and wait for at least 5 minutes after the engine has been switched off. Be sure the oil level is maintained between the upper and lower marks on the dipstick. Low oil level can damage the engine. Overfilling can result in high oil consumption and damage the emissions system. The distance between the dipstick marks represents approx. 1.6 US qt (1.5 liter). The oil should preferably be checked when cold, before the engine has been started.

NOTE: The engine must be stopped when checking the oil. Do not fill to the max when the engine is hot



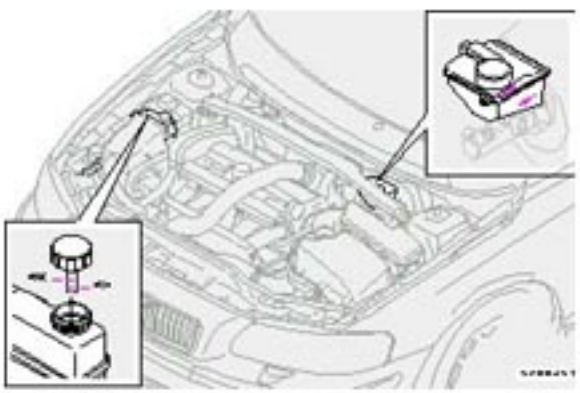
Approx. 1.6 US qt (1.5 liter)

WARNING!
Do not allow oil to spill onto or come into contact with hot exhaust pipe surfaces.

Adding oil

- Add oil of the same kind as already used.
- Capacity (including oil filter): 6.1 US qts. (5.8 liters)
- Capacity (including oil filter and oil cooler): 7.1 US qts. (6.7 liters)
- The oil filter should be replaced at every oil change.

pg. 137 Power steering/Brake fluid reservoirs



Power steering fluid

Power steering fluid

The fluid level should always be between the MIN and MAX marks.

Fluid type: ATF
Replace: No fluid change required

NOTE: If a problem should occur in the power steering system or if the car has no electrical current and must be towed, it is still possible to steer the car. However, keep in mind that greater effort will be required to turn the steering wheel.

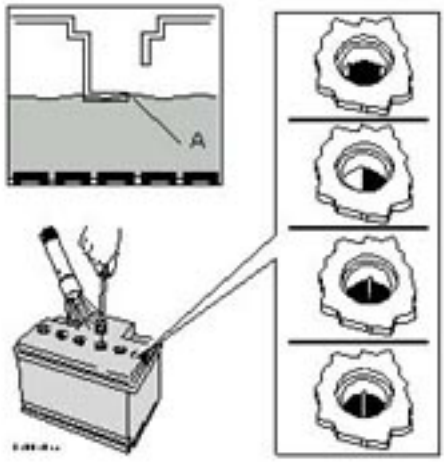
Brake fluid

The brake fluid should always be above the MIN mark on the side of the reservoir. Check, without removing the cap, that there is sufficient fluid in the reservoir.

Fluid type: DOT 4+ boiling point >536°F(280°C), P/N 9437433
Replace: Every second year or 30,000 miles (48,000 km). The fluid should be replaced once a year or every 15,000 miles (24,000 km) when driving under extremely hard conditions (mountain driving, etc.)

Always entrust brake fluid changing to an authorized Volvo retailer.

pg. 138 Battery maintenance



Battery maintenance

The battery in your car is located under the floor of the cargo area.

Driving habits and conditions, climate, the number of starts, etc. all affect the service life and function of the battery. In order for your battery to perform satisfactorily, keep the following in mind:

- Check the fluid level in each cell in the battery every 24 months or every 15,000* miles (24,000 km), whichever is sooner. The fluid should be at the level shown in the illustration above (A**).

Use a screwdriver to open the caps and a flashlight to inspect the level.

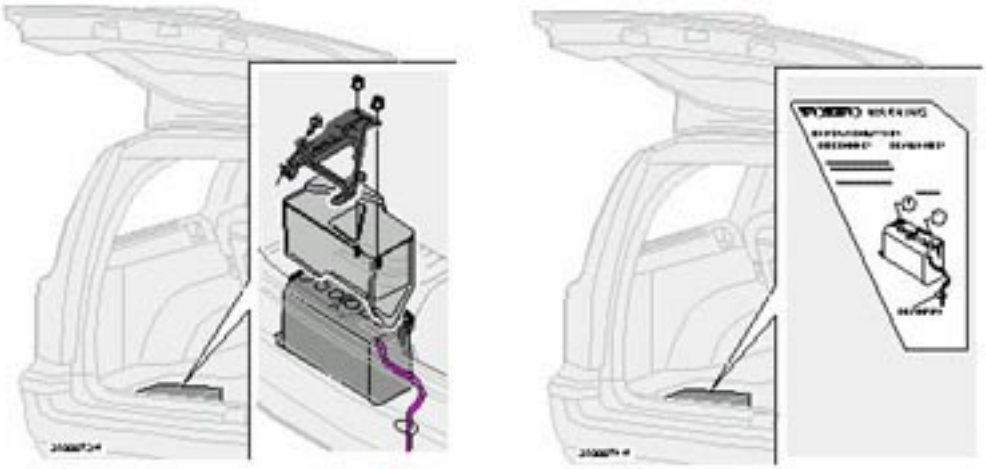
- If necessary, add **distilled water**. The level should never be above the indicator (A).
- The fluid level should be checked if the battery has been recharged.
- After inspection, be sure the cap over each battery cell is securely in place.
- Check that the battery cables are correctly connected and properly tightened.
- Never disconnect the battery when the engine is running, for example when changing the battery.
- The battery should be disconnected from the vehicle when a battery charger is used directly on the battery. However, if the battery is being charged via the connecting points in the engine compartment (see page 101), the battery must be connected.

PROPOSITION 65 WARNING!
Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm. Wash hands after handling.

* More frequently in warm climates.
** The level indicator inside the battery could be designed in various ways. See illustration above!

Battery Warning Symbols

pg. 139 Battery maintenance



*Ventilation hose**

Replacing the battery

- Switch off the ignition.
- Unscrew the cover over the battery. Wait at least **10** minutes after switching off the ignition before disconnecting the battery so that all information in the car's electrical system can be stored in the control modules.
- Disconnect the negative (ground) cable first.
- Disconnect the positive cable and pull the ventilation hose* from the battery.
- Lift out the old battery and put a new battery into place.
- Connect the positive cable first.
- Connect the negative (ground) cable.
- Be sure that the ventilation hose* is securely connected to the battery and that the other end of the hose is properly routed through the ventilation opening in the floor of the battery compartment.
- Reinstall the cover and screw it securely in place.

WARNING!

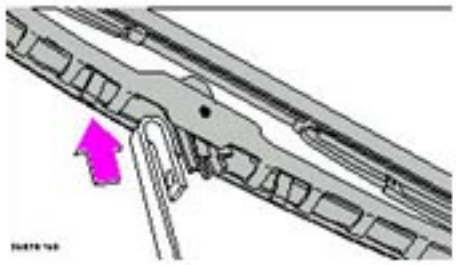
- Never expose the battery to open flame or electric spark.
- Do not smoke near the battery.
- Battery fluid contains sulfuric acid. Do not allow battery fluid to contact eyes, skin, fabrics or painted surfaces. If contact occurs, flush the affected area immediately with water. Obtain medical help immediately if eyes are affected.

NOTE: After the battery has been disconnected or replaced, lock and unlock the car with the central locking system's remote control to reactivate such features as the power windows, sunroof, courtesy lighting, etc.

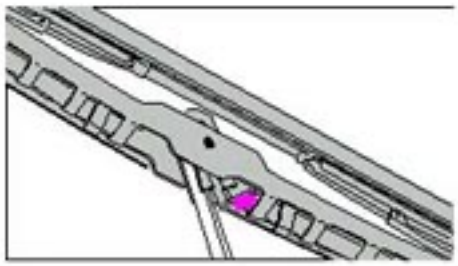
WARNING!
*** Ventilation hose: The battery generates hydrogen gas, which is flammable and explosive. The battery is fitted with a ventilation hose which vents hydrogen gas out of the battery compartment through a ventilation opening in the bottom of this compartment. If the battery must be replaced, it is essential that the ventilation hose is properly connected to the battery and that it is routed through the ventilation opening provided (see illustration).**
Be sure the ventilation hose is free of debris.
Only use replacement batteries equipped with a ventilation hose. Consult your Volvo retailer.

pg. 140 Replacing wiper blades

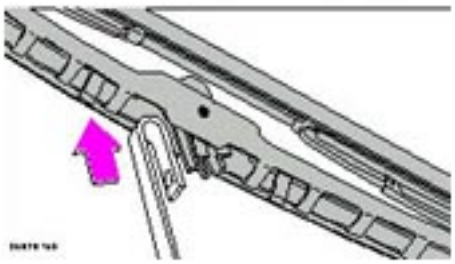
Windshield wiper blades



Lift the wiper arm off the windshield and hold the blade at a 45° angle to the arm. Press the end of the plastic clip located on the arm.



Slide the wiper blade along the arm to release it from the hook. The entire hooked part of the wiper arm must pass through the opening in the wiper blade.



The driver's side wiper blade is straight. The passenger's side wiper blade is curved to match the curve at the base of the windshield.

Pull the old blade free of the wiper arm. Install the new blade (installation is the reverse of removal) and make sure that it is properly attached to the wiper arm.

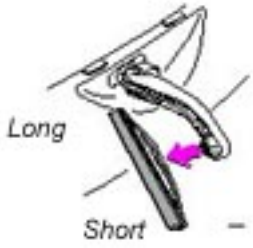
NOTE: For reasons of safety, you should change the windshield wiper blades as soon as they start to leave marks on the windshield or fail to wipe efficiently and cleanly.

To obtain maximum lifetime from a set of wiper blades, clean them with a stiff-bristle brush and warm,

soapy water as part of a normal car wash.

Replacement of tailgate wiper blade

Pull the wiper arm out away from the glass. Pull off the wiper blade outwards toward the tailgate. Press the new wiper blade into place. Check that it is properly secured.



Headlight wiper blades (certain models)

Pull the wiper blade in the direction indicated by the arrow in the illustration to remove it. Press the new wiper blade into place. The long section of the blade should point toward the grille. Check that the new blade is properly attached to the wiper arm.

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pg. 142 Label information

1 Vehicle Emission Control Information
Your Volvo is designed to meet all applicable emission standards, as evidenced by the certification label on the underside of the hood. For further information regarding these regulations, please consult your Volvo retailer.

2 Vacuum hose routing
(underside of hood)

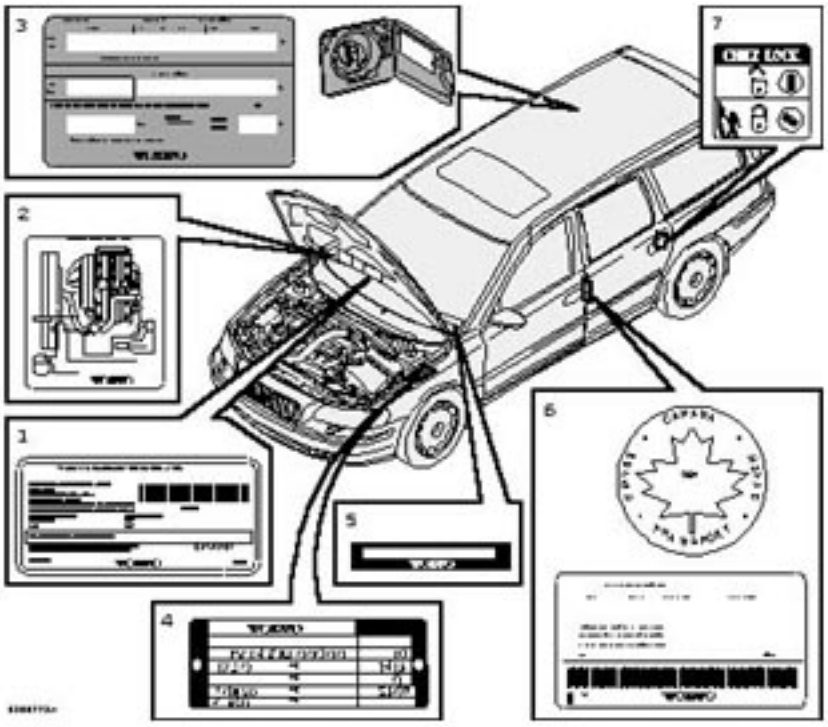
3 Loads and Tire Pressures
(on inside of fuel filler door)

4 Model plate
Vehicle Identification Number (VIN). Codes for color and upholstery, etc. The plate is located in the engine compartment, on the inside of the left front fender.

5 Vehicle Identification Number (VIN) *
The VIN plate is located on the top left surface of the dashboard. The VIN is also stamped on the right hand door pillar.

6 Federal Motor Vehicle Safety Standards (FMVSS) specifications (USA) and Ministry of Transport (CMVSS) standards (Canada)
Your Volvo is designed to meet all applicable safety standards, as evidenced by the certification label on the facing side of the driver's door. For further information regarding these regulations, please consult your Volvo retailer.

7 Child safety latch label



* The Vehicle Identification Number (VIN) should always be quoted in all correspondence concerning your vehicle with the retailer and when ordering parts.

All specifications are subject to change without prior notice.

pg. 143 Dimensions and weights

Dimensions

Length - 185.4 in. (471 cm), XC70 -186.2 (473 cm)
Width - 71 in. (180 cm), XC70 - 73.2 in. (186 cm)
Height - 57.5 in. (147 cm), V70 AWD - 58.7 in. (149 cm), XC70 - 61.5 in. 156 cm)
Wheelbase - 108.5 in. (276 cm), XC70 - 108.8 in. (276 cm)
Track, front - 61.5 in. (156 cm), XC70 - 63.4 in. (161 cm)
Track, rear - 61.4 in. (156 cm), XC70 - 60.9 in. (155 cm)
Turning circle (between curbs) - 35.8-39 ft. (10.9-11.9 m)
Cargo capacity - 17.1 cu. ft. (0.48 m^3) [1]
- 26.3 cu. ft. (0.74 m^3) [2]
- 58.0 cu. ft. (1.64 m^3) [3]

	USA	Canada
Max roof load	220 lbs	100 kg
Max trailer weight (w/o brakes)	1100 lbs	500 kg
Max trailer weight*		
- (with brakes, 2" ball)	3300 lbs	1500 kg
- (with brakes, 1 7/8" ball)	2000 lbs	900 kg
Max tongue weight *	165 lbs	75 kg

WARNING!
When adding accessories, equipment, luggage and other cargo to your vehicle, the total loaded weight capacity of the vehicle must not be exceeded.

1) Rear seat backrest up, load height - upper edger of backrest
2) Rear seat backrest folded down, load height - upper edge of front seat backrests/lower edge of rear window
3) Rear seat backrest folded down, load height - headlining (ceiling)

Weights	USA	Canada

Gross vehicle weight (GVW)		
V70 man.	4630 lbs	2100 kg
V70 aut.	4690 lbs	2130 kg
V70 Turbo man.	4670 lbs	2120 kg
V70 Turbo aut.	4730 lbs	2150 kg
V70 AWD	4890 lbs	2220 kg
XC70	4890 lbs	2220 kg
Capacity weight ***	930 lbs	420 kg
Curb weight		
V70	3390-3585 lbs	1541-1632 kg
V70 AWD	3690-3725 lbs	1675-1695 kg
XC70	3765-3800 lbs	1710-1730 kg
Permissible axle weight, front		
V70 man.	2290 lbs	1040 kg
V70 aut.	2330 lbs	1060 kg
V70 Turbo aut.	2400 lbs	1090 kg
V70 AWD	2400 lbs	1090 kg
XC70	2490 lbs	1130 kg
Permissible axle weight, rear		
V70, V70 Turbo	2470 lbs	1120 kg
V70 AWD	2580 lbs	1170 kg
XC70	2620 lbs	1190 kg

* When driving for prolonged periods at temperatures above 86° F (30° C), the maximum recommended weight is 2000 lbs (900 kg).
**See also section "Trailer towing"
*** The max permissible axle loads or the gross vehicle weight must not be exceeded.

All specifications are subject to change without prior notice.

pg. 144 Engine specifications

Engine specifications

Designation: Volvo B 5234 T3

Output	247 hp at 5200 rpm (184 kW/87 rps)
Max. torque	243 ft. lbs. at 2400-5200 rpm (330 Nm/42-87 rps)
Number of cylinders	5
Bore	3.19" (81 mm)
Stroke	3.54" (90 mm)
Displacement	2.3 liters
Compression ratio	8.5:1
Number of valves	20

Designation: Volvo B 5254 T2

Output	208 hp at 5000 rpm (154 kW/83 rps)
Max. torque	236 ft. lbs. at 1500-4500 rpm (320 Nm/25-75 rps)
Number of cylinders	5
Bore	3.27" (83 mm)
Stroke	3.67" (93.2 mm)
Displacement	2.5 liters
Compression ratio	9.0:1
Number of valves	20

Designation: Volvo B 5244 T3

Output	197 hp at 6000 rpm (147 kW/100 rps)
Max. torque	210 ft. lbs. at 1800-5000 rpm (285 Nm/30-83 rps)
Number of cylinders	5
Bore	3.27" (83 mm)
Stroke	3.54" (90 mm)

Displacement	2.4 liters
Compression ratio	9.0:1
Number of valves	20

Designation: Volvo B 5244 S

Output	168 hp at 6000 rpm (125 kW/100 rps)
Max. torque	166 ft. lbs. at 4500 rpm (225 Nm/75 rps)
Number of cylinders	5
Bore	3.27" (83 mm)
Stroke	3.54" (90 mm)
Displacement	2.4 liters
Compression ratio	10.3:1
Number of valves	20

Charge air cooler (Intercooler)
Turbocharged engines employ a turbo-compressor to force air into the engine inlet manifold and a charge air cooler to cool the compressed inlet air. The resulting increase in air flow raises pressure in the intake manifold and increases engine power over that developed by A normally-aspirated engine. The charge air cooler (which resembles a radiator) is located between the turbo-compressor and inlet manifold.

pg. 145 Transmission specifications

Power transmission

Manual transmission: M 56 LK
Single-disc dry plate clutch. All-synchromesh on all gears including reverse; integrated final drive. Operation via a floor mounted gear lever.
Final drive ratio 4.00:1
Reduction ratios
1st gear 3.39:1
2nd gear 1.91:1
3rd gear 1.19:1
4th gear 0.87:1
5th gear 0.70:1

Reverse 3.30:1

Automatic transmission: AW 55-50
5-speed automatic electronically controlled gearbox comprising a hydraulic torque converter with a lock-up function; planetary gear, integrated final drive.
Operation via a floor mounted gear selector lever. Drive shafts with symmetrical joint location.
Overdrive.

Final drive ratio 2.44:1*
Reduction ratios AW5
1st gear 4.77:1
2nd gear 2.10:1
3rd gear 1.96:1
4th gear 1.32:1
5th gear 1.02:1
Reverse 3.23:1

* XC70 2.65:1

pg. 146 Oil/fluid specifications and volumes

Engine Oil

Meeting or exceeding ILSAC specification GF-2, including ACEA A1, API SJ, SJ/CF, and SJ/Energy Conserving.

Oil additives must not be used.

Volume:
Capacity (including oil filter): 6.1 US qts. (5.8 liters)

Automatic Transmission Fluid

AW5: Only Volvo gearbox oil (1161540-8). Do not mix with other oils.
Volume: 7.9 US qts (7.5 liters)

Cooling system

Type: Positive pressure, closed system. The thermostat begins to open at 194 °F (90 °C)

Coolant: Volvo original coolant/antifreeze

All specifications are subject to change without prior notice.

Power steering fluid

ATF fluid
Volume: 0.95 US qts (0.9 liters)

Brake fluid

DOT 4+ boiling point >536°F(280°C), P/N 9437433
Volume: 0.64 US qts (0.6 liters)

Climate control system - refrigerant (R 134a)

Oil: PAG
Volume: 2.2 lbs (1,000 g) R134a

Fuel

Minimum octane requirement - AKI 87 (RON 91)
Volume (fuel tank): 18.5 US gals (70 liters) or 19 US gals (72 liters) on models equipped with All Wheel Drive.

Washer fluid reservoir

Volume: 4.7 US qts (4.5 liters)

All specifications are subject to change without prior notice.

pg. 147 Fuel system, Distributor ignition system, Suspension

Fuel system

The engine is equipped with a multiport fuel injection system.

Distributor ignition system

Firing order: 1-2-4-5-3
Electronic ignition setting: Not adjustable
Spark plugs: Champion RC8PYP 8 (or equivalent)
Spark plug gap: 0.028-0.032" (0.7-0.8 mm)
Tightening torque: 18.4 ft. lbs. (25 Nm)

WARNING!
The ignition system operates at very high voltages. Special safety precautions must be followed to prevent injury. Always turn the ignition off when:

- Replacing ignition components e.g. plugs, coil, etc.
- Do not touch any part of the ignition system while the engine is running. This may result in a shock and bodily injury.

Front suspension

Spring strut suspension with integrated shock absorbers and control arms linked to the support frame. Power-assisted rack and pinion steering. Safety type steering column. The alignment specifications apply to an unladen car but include fuel, coolant and spare wheel.

Rear suspension

Individual rear wheel suspension with longitudinal support arms, double link arms and track rods.

All specifications are subject to change without prior notice.

pg. 148 Electrical system

Electrical system

12 Volt, negative ground.
Voltage-controlled generator. Single-wire system with chassis and engine used as conductors. Grounded on chassis.

Battery

Voltage: 12 Volt, capacity: 600 A/115 min reserve capacity.
The battery contains corrosive and poisonous acids. It is of the utmost importance that old batteries are disposed of correctly. Your Volvo retailer can assist you in this matter.

Generator
Rated output: max. current: 140 A

Starter motor:
Output: 1.7 kW

Bulbs

Bulb	US no.	Power	Socket
Headlights			
- High beam	HB3	60W	-
- Low beam	H7	55W	-
Front parking lights		5W	W2.1x9.5d
Front direction indicators	(yellow)	21 W	BAU 15d
Front fog lights	H1	55 W	-
Rear direction indicators	(yellow)	21W	BAU 15 s
Tail lights	67	5W	BA 15 s
Brake lights	1156	21W	BA 15 s
Backup lights	1156	21W	BA 15 s
Rear fog light/rear parking lights		21/4W	BA 15 s
License plate light	-	5 W	W 2.1x9.5d
Door step courtesy lights			
Front	-	5W	SV 8.5
Cargo area lights	-	5 W	SV 8.5
Glove compartment light	-	2 W	BA 9s
Vanity mirror light(s)	-	12V 1.2W	-
Instrument lighting	-	3 W	W 2.1x9.5d

All specifications are subject to change without prior notice.

pg. 149 Volvo On Call

Your new Volvo comes with a four year ON CALL road assistance. Additional information, features, and benefits are described in a separate information package in your glove compartment.

If you have misplaced your package, dial:
In the U.S.A.
1-800-63-VOLVO (1-800-638-6586)
In Canada:
1-800-263-0475

Technician certification

In addition to Volvo factory training, Volvo supports certification by the National Institute for Automotive Excellence (A.S.E.). Certified technicians have demonstrated a high degree of competence in specific areas. Besides passing exams, each technician must also have worked in the field for two or more years before a certificate is issued. These professional technicians are best able to analyze vehicle problems and perform the necessary service procedures to keep your Volvo at peak operating condition. All specifications are subject to change without prior notice.

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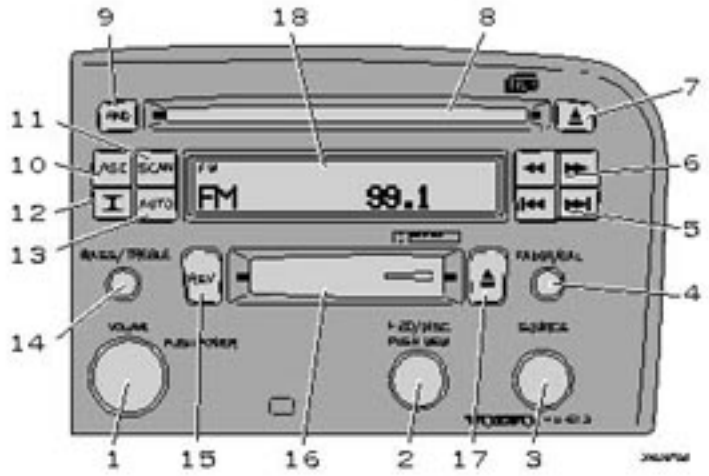
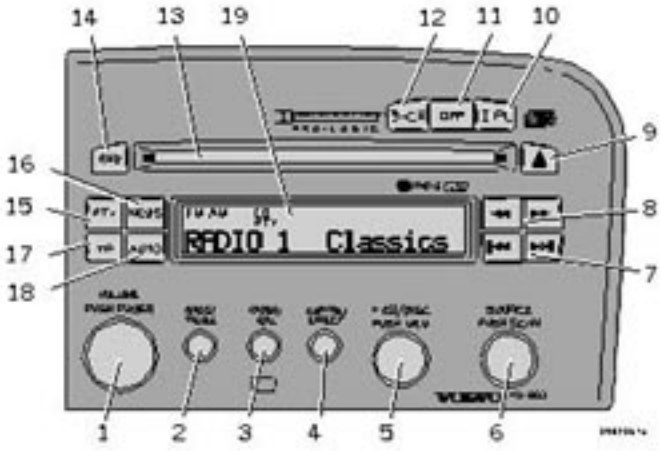
pg. 152 Audio system HU-613 - overview



1. On/off - press

Volume - turn
2. Selector knob for:
Stored radio frequencies
CD changer - selecting disc
3. Selector knob:
Radio
Cassette
CD
CD changer
TV (option on certain models)
4. Fader - press and turn
Balance - press, pull and turn
5. Radio - Station seek up/down
Cassette - selecting next/previous track
CD - Selecting next/previous track
6. Radio - Manual station selection
Cassette - Fast winding forward/backward
CD - Fast forwards/backward
7. CD eject
8. CD slot
9. CD random play
10. Active Sound Control (ON or OFF)
11. Scan function
12. Dolby B Noise Reduction
13. Automatic presetting of radio stations
14. Bass - press and turn
Treble - press, pull and turn
15. Tape direction selector
16. Cassette opening
17. Cassette eject
18. Display

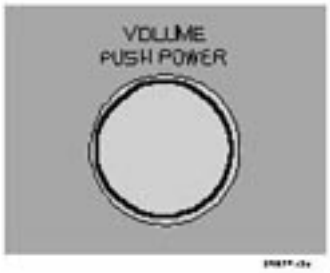
pg. 153 Audio system HU-803 - overview



1. On/off - press
   Volume - turn
2. Bass - press and turn
   Treble - press, pull and turn
3. Fader - press and turn
   Balance - press, pull and turn
4. Center volume - press and turn
   Effect channel volume - press, pull and turn
5. Selector knob for:
   Stored radio frequencies
   CD - selecting disc
6. Selector knob:
   Radio
   Internal CD changer
   Station scan - press
   TV (option on certain models)
   External CD changer (option)
7. Radio - Station seek up/down
   CD - Selecting next/previous track
8. Radio - Manual station selection
   CD - Fast forward/backward
9. CD eject
10. Dolby Pro Logic - switching on
11. 2 channel stereo
12 3 channel stereo
13. CD slot
14. CD random play
15. Program type
16. News

17. Traffic information
18. Automatic presetting of radio stations
19. Display

pg. 154 Audio systems HU-613/HU-803



Switch on/off

Press the knob to switch on or turn off the radio.

Volume control

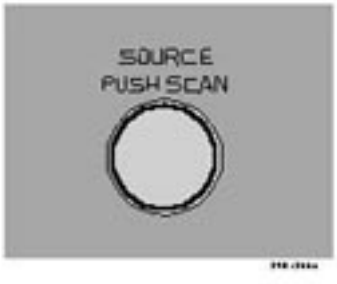
Turn the knob clockwise to increase volume. Volume control is electronic and does not have an end stop. If you have a key pad in the steering wheel, increase or decrease the volume with the + or - buttons.

Bass

Adjust the bass by pressing the button to extend the control and turning it to the left (less bass) or to the right (more bass). A "detent" indicates "equalized" bass. Press the button back in when you have made the adjustment.

Treble

Adjust the treble by pressing the button to extend the control, pulling it out as far as possible, and then turning it to the left (less treble) or to the right (more treble). A "detent" indicates "equalized" treble. Press the button back in when you have made the adjustment.



Band selector

Turn "SOURCE" knob to select FM or AM. The station and band are displayed. You can also select cassette deck, CD, or optional CD changer with this knob.

Active sound control (ASC)

The ASC (Active Sound Control) automatically adapts volume to vehicle speed. Press the ASC button (HU-613) for several seconds to switch this function ON or OFF. This function is included in the Advanced User Mode on the HU-803 equipped with this feature.
"ASC ON" or "ASC OFF" will be shown in the display for several seconds.

pg. 155 Audio systems HU-613/HU-803

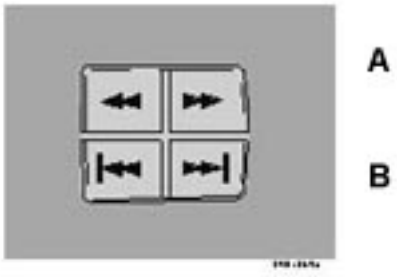
Fader - Balance front/rear

Adjust front/rear speaker balance by pressing the button to extend the control and turning it to the left (more sound from the rear speakers) or to the right (more sound from the front speakers). A "detent"

indicates "equalized" balance. Press the button back in when you have made the adjustment.

Balance right/left

Adjust left/right speaker balance by pressing the button to extend the control, pulling it out as far as possible and then turning it to the left (more sound from the left speakers) or to the right (more sound from the right speakers). A "detent" indicates "equalized" balance. Press the button back in when you have made the adjustment.



A - Setting station

Press the left side of the button to select lower frequencies and the right side for higher frequencies. Set frequencies are displayed.

B - Station seek up/down

Press the left side (lower frequency) or right side (higher frequency) of the button to start the seek function. The radio seeks the next audible station and tunes it in. Repeat the procedure to continue the seek function.

Audio system controls on the steering wheel

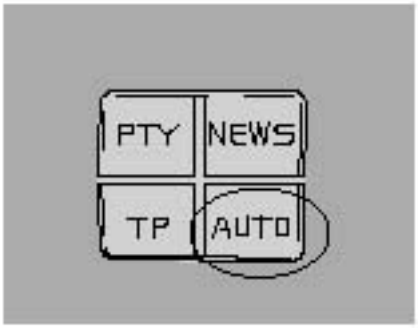
Station seek up/down

If you have a key pad in the steering wheel press the right or left arrow to switch between preset stations.

Scan function

Press the SCAN button (HU-613) or the SOURCE button (HU-803) to start the station scan function. When a station is found, scanning stops for several seconds, after which scanning will continue. Press the SCAN or SOURCE button when a station has been found if you would like to listen to that station and to discontinue the scan function.

pg. 156 Audio systems HU-613/HU-803 - radio



A - Automatic station preset

This function seeks and stores up to 10 strong AM or FM stations in a separate memory. This function is especially useful in areas where you are not familiar with the radio stations.

1. Press in the "AUTO" button for at least 2 seconds. A number of strong signal stations (max. 10) from the currently selected waveband are now stored automatically in the memory. An "A" and "AUTO" is displayed. If there is no station with sufficient signal strength "NO STATION" is displayed.

2. Turn "1-20/DISC" button if you wish to change to another of the auto-stored stations.
Another auto-stored station is selected with each turn.

Programming stations

1. Tune in the desired frequency.

2. Press the "1-20/DISC" button. Select a number by turning forwards or backwards. Press again to store the selected frequency and station.

Preset

To choose a pre-set station, turn "1-20/DISC" button to the stored number. The currently selected station is displayed.

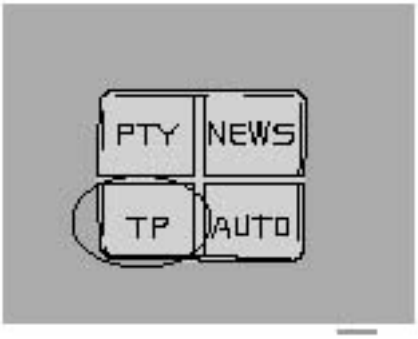
Radio Data System (RDS, also referred to as RBDS) -HU- 803 only

This feature, which may not work in your area, functions only with FM broadcasts. The HU-803 radio in your car is equipped with an advanced system allowing information from broadcasters to be transmitted visually, as text, together with the audio signal. This information is then decoded by the radio and made available for several new and unique features.

The RDS or Radio Data System operates in the FM band only, and the information transmitted is supplied exclusively by participating broadcasters. Volvo has no control over the accuracy of the data or information. Please refer to the following pages regarding specific descriptions and operation of these functions.

Coverage by local broadcasters may be limited at this time, but as the technology and benefits grow, you will find the radio in your car is equipped to take advantage of this system.

pg. 157 Audio systems HU-803 - radio



Traffic information (TP) -HU- 803 only

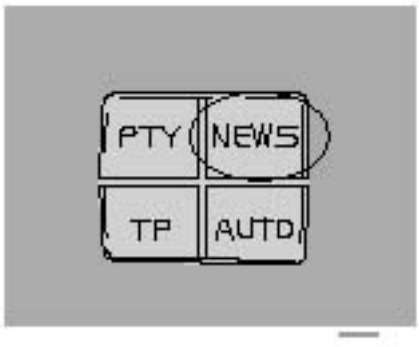
This feature may not be apply in your area and only functions with FM broadcasts. (See previous page)

Push the "TP" button for traffic information from RDS stations. "TP" is displayed when the function is connected.

When the unit is in Cassette or CD mode, the FM radio function will seek in the background for a station with a strong signal broadcasting traffic information. If a cassette or CD are playing when the radio receives a traffic bulletin, that function is interrupted and the bulletin is broadcast with the volume pre-selected for traffic information.

When the bulletin is finished the unit immediately returns to the previously set volume and continues playing the cassette or CD.

- Traffic information can only be heard when **TP** is displayed.
- If only TP is displayed, this indicates that no traffic information is being received at the time.
- If you do not wish to listen to an ongoing traffic bulletin, press the "TP" button. The TP function will remain active and the radio will continue to monitor traffic information.
- To turn the TP function off, press the **TP** button. TP is no longer shown in the display.



News on/off - HU-803 only

This feature may not apply in your area and only functions with FM broadcasts. (See previous page)

Press the "NEWS" button to activate the news function. The text NEWS is displayed. Press the "NEWS" button again if you want to switch off the function.

As soon as a news broadcast begins, the news program will interrupt the Cassette, CD or CD changer.

If you do not wish to listen to the news program, press the "NEWS" button again. The news function

will remain active and the radio will continue to monitor news programs.

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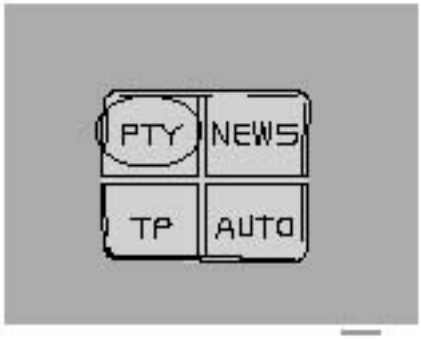
Program types (HU-803 only)

Program type	Text displayed
News	News
Information	Inform
Sports	Sports
Talk	Talk
Rock	Rock
Classic rock	Cls_Rock
Adult hits	Adlt_Hit
Soft rock	Soft_Rck
Top 40	Top_40
Country	Country
Oldies	Oldies
Soft	Soft
Nostalgia	Nostalga
Jazz	Jazz
Classical	Classicl
Rhythm and Blues	R_&_B
Soft Rhythm and Blues	Soft_R&B
Foreign language	Language
Religious music	Rel_Musc
Religious talk	Rel_Talk
Personality	Persnlty
Public	Public
College	College
--	
--	
-	
Weather	Weather



Program type - HU-803 only

The PTY function enables you to select specific types of programs.
To search for a particular program type:

1. Press "PTY" button to initiate the function. The currently tuned station's program type is displayed.
2. Scroll through the list of program types by turning the "1-20/DISC" button.
3. When you have reached the program type you require press the "1-20/DISC" button to begin the search.
4. If the radio finds a station with the selected program type, it sets it. If the radio finds no station with the selected program type, it will return to its previous function. PTY is then in standby mode and remains so until a program of the selected type begins The radio then changes to the station with the selected program type.
5. The PTY symbol is displayed until the radio finds the selected program type and as long as that program is being transmitted.
6. To manually deactivate this function, press the PTY button again. The PTY function is automatically deactivate after it is used once.

(certain models)

This function can also be used in the CD mode.
Steps 1-4 are the same as described to the left.

5. If there is more than one station with the selected program type, you can select using ▶▶| , |◀◀ or the scan button. The PTY function is active until the radio finds the selected program type and as long as the selected station transmits that program type.

6. To return to standby mode, press PTY again. The CD will resume playing until the selected program type is sent again.

7. To deactivate PTY standby, press the PTY button again. The PTY symbol will turn off.

Volume of traffic information/news/PTY -HU- 803 only

If you change the volume when the TP, PTY or NEWS function is active, the new volume setting will be stored automatically.

pg. 159 AUM (Advanced User Mode) - certain models

AUM (Advanced User Mode)

- With the radio switched off, press and hold seconds to start the AUM function.the volume wheel down for at least 5 5 seconds to start the AUM function.
- *Turn* the **1-20/DISC** knob to choose an AUM function (see function list below).
- When the function has been chosen, the function's current setting flashes. *Press* the **1-20/DISC** knob to choose an alternative (e.g. ON/OFF, LOW/MID/HIGH, etc., depending on the function).
- Continue to choose function/alternative.

To *reset* all AUM functions to factory settings, turn the **1-20/DISC** knob until **"SET TO DEFAULT"** is shown in the display, and then press the same knob. All AUM settings are reset to default position and the radio reverts to normal status (music, news, etc.).

To *save* any changes and revert to normal position, turn the **1-20/DISC** knob until **"BACK and SAVE"** are shown in the display, and press the same knob.

To revert to normal position without saving the changes, turn the **1-20/DISC** knob until **"BACK without SAVE"** is shown in the display, and press the same knob.

AUM functions (starting position "default" is underscored)

The following functions are available on all audio systems:

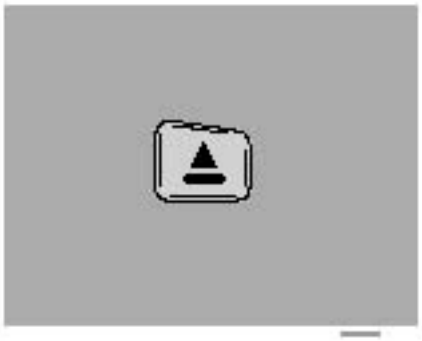
- SET TO DEFAULT (See above).
- ASC (Active Sound Control) ON/OFF - The ASC function automatically matches the sound volume to the speed of the car.
- ASC TABLE - Choose level of the ASC function (LOW/MID/HIGH).
- SRC ON/OFF - Use this function to activate/deactivate the function which reduces the noise in poor reception conditions. The function is normally used when the radio is in AM mode.
- SRC TABLE - Choose level of SRC function (LOW/MID/HIGH).
- TAPE DOLBY ON/OFF - Activates/deactivates Dolby noise reduction when you listen to a cassette tape (HU 405/605).
- BACK and SAVE (See above).

- BACK without SAVE (See above).

The following functions are available on the HU-803 only:

- AF SWITCHING ON/OFF (automatic frequency update) - The AF function ensures that the strongest available transmitter for a program is selected.
- REGIONAL ON/OFF (regional radio program) - This function makes it possible to continue to listen to a regional transmitter, even if the signal is weak.
- EON (Enhanced Other Networks) LOCAL/DISTANT - This function determines whether the radio program you are listening to is to be switched off before e.g. a traffic report or news broadcast (if these functions are selected) only if the signal is strong (LOCAL) or whether the radio must also try to capture weaker signals (DISTANT).
- NETWORK ALL/TUNED - With this function you can decide whether the radio program you are listening to is to be switched off before e.g. a traffic report or news broadcast (if these functions are selected) only if the report is on the channel you are listening to (TUNED), or whether the program is to be switched off regardless of which radio channel the report/broadcast is on (ALL).

pg. 160 Audio system HU-613/HU-803 - CD player



CD eject button

CD player - on

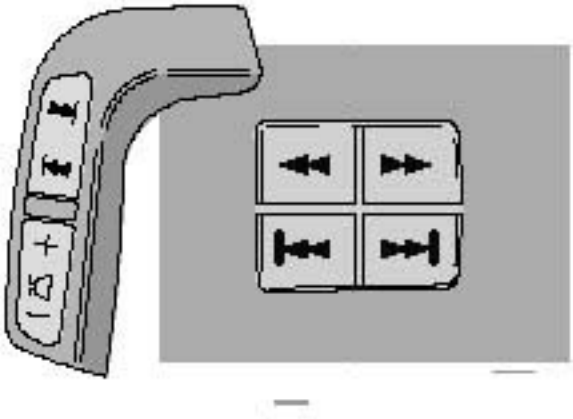
HU-613: Insert a CD.

HU-803: Insert a CD. If you would like to insert another disc (a maximum of 4 CD's can be inserted in the player), turn the "1-20/DISC" button so that "CD 2 Load Disc" is displayed. Insert the CD. Repeat this procedure for discs 3 and 4.

Once the disc(s) have been inserted, select the CD function by turning the "SOURCE" knob.

Selecting a disc (HU-803 only)

Turn the "1-20/DISC" knob. The number of the disc and track is displayed.



CD eject

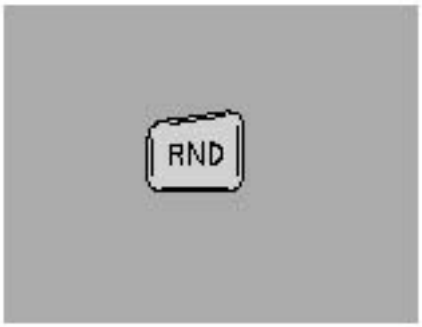
HU-613: If you press this button the CD stops playing and the disc is ejected.

HU-803: The CD currently playing will be ejected. If more than one CD has been inserted, turn the "1-20/DISC" to display the number of the CD you would like to eject and press the CD eject button.

NOTE: For traffic safety reasons, the ejected CD must be removed within 12 seconds or it will be automatically reinserted into the CD player.

Fast winding

Press "▶▶ " or " ◀◀ " to seek within a track.



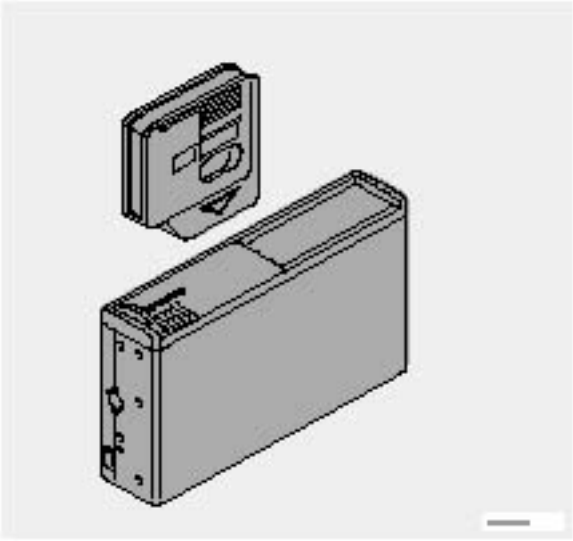
Next/previous track

Press "|◀◀ " to skip to the next track or "▶▶| " to skip to the previous track. The track number is shown in the display. If you have the key pad in the steering wheel you can also use these arrows in the same way.

Random

Press "RND" to connect the random function. The unit plays tracks from the disc in random order. "RND" (random) is displayed as long as the function is activated.

pg. 161 Audio system HU-613/HU-803 - CD changer (option)



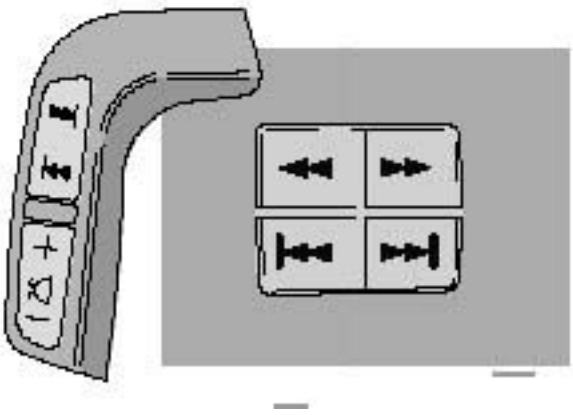
CD changer

The optional CD changer, mounted in the cargo area, can accommodate 10 discs. To load the magazine:

- Slide the cover on the CD changer open.
- Press the eject button.
- Pull the magazine out of the changer and insert the discs.
- Press the magazine back into the changer and slide the cover back into place.

Playing a CD

Turn "SOURCE" to activate CD changer mode. The CD changer continues playing the disc and track that was being played most recently. If the CD changer magazine is empty "LOAD MAGAZINE" is displayed.

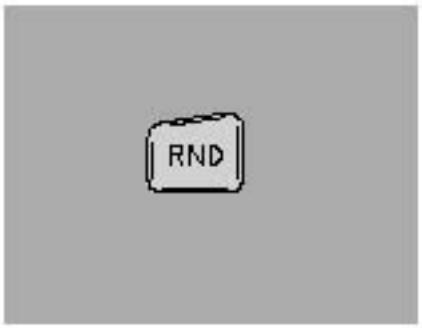


Selecting a disc

Turn the "1-20/DISC" knob. The number of the disc and track is displayed.

Fast winding

Press "▶▶ " or " ◀◀ " to seek within a track.



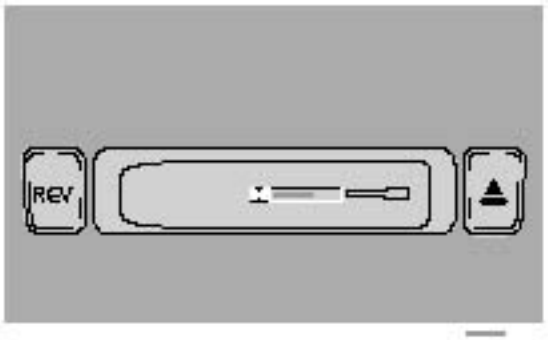
Next/previous track

Press "▶▶| " to skip to the next track or " |◀◀ " to skip to the previous track. Disc and track number are displayed. If you have the key pad in the steering wheel you can also use these arrows in the same way.

Random

Press "RND" to connect in the random function. A randomly selected track is chosen from a randomly selected disc. Then a new track is selected in the same way. "RND" (random) is displayed as long as the function is activated.

pg. 162 Audio system HU-613 - cassette deck

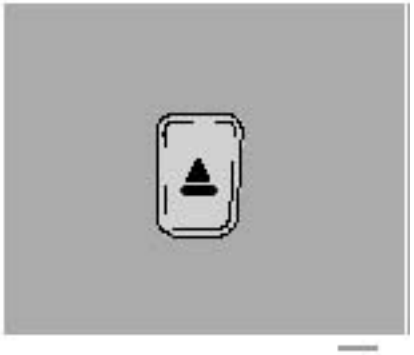


Cassette deck (HU-613) -inserting a cassette

Slide a cassette into the slot with the tape to the right (side 1 or A upwards). The ignition key must be in position I or II before a cassette can be inserted. "TAPE A" or "TAPE B" is displayed. When one side has finished playing the unit will automatically begin playing the other side. If a cassette is already inserted in the cassette deck select cassette play by turning the "SOURCE" knob.

Changing tape direction

Press the "REV" button if you wish play the other side of the tape. The side being played is displayed.



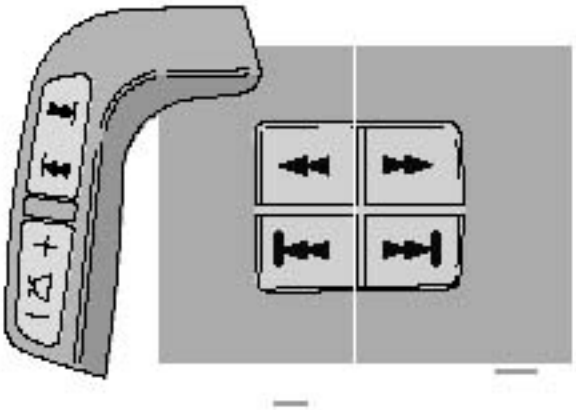
Tape eject button

Tape eject

If you press this button the tape stops and the cassette is ejected. To select a new mode (radio, CD) turn the "SOURCE" button. A cassette can be ejected even if the ignition is switched off.

Dolby B Noise reduction

The function is preset. To switch the function off, hold down the " [DOLBY] " button until the Dolby symbol in the display goes out. Press the same button again to reactivate the function or use the Advanced User Mode function.



Fast winding

The tape can be wound forward with "▶▶ " and backwards with " ◀◀ ". During fast winding "FF" (forward) respectively "REW" (backward) is displayed. Fast winding is interrupted if you press the button again.

Next/Previous track

If you press "▶▶| " button the tape automatically winds forward to the next track. If you press "|◀◀ " button the tape automatically rewinds to the previous track. This feature requires at least a 5 second break between tracks. If you have the key pad in the steering wheel you can also use these arrows in the same way.

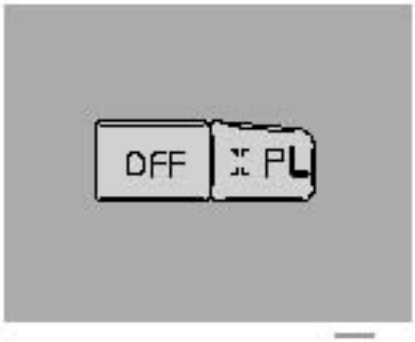
pg. 163 Dolby Surround Pro Logic HU-803 (option)

Dolby Surround Pro Logic (HU-803 only)

During CD playback, Dolby Surround Pro Logic, together with the speaker in the center of the dashboard, offers you very clear and realistic sound.

The Dolby unit divides the normal stereo channels from left - right to left - center - right. In addition, ambient surround sound is produced by the rear speakers. This ambient surround sound mirrors the resonance of a recording studio.

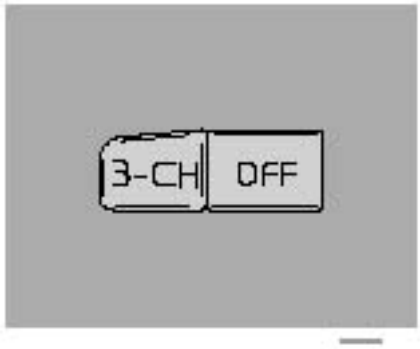
Most recordings today are made so that the vocalist/soloist is heard from the center foreground while the orchestra is heard over the entire left-right panorama as well as from behind. This enables the Dolby Surround Pro Logic system to provide a unique listening experience.



Dolby Surround Pro Logic

To select Dolby Surround Pro Logic during CD playback, press " PL". "Dolby Pro Logic" is displayed. Press "OFF" to return to 2 channel stereo.

pg. 164 Dolby Surround Pro Logic HU-803 (option)



3 channel stereo

To select 3 channel stereo press "3-CH". "3 ch" is displayed. Press "OFF" to return to 2 channel stereo.

Center speaker volume

Set the center speaker volume by pressing the button to extend the control and turning it to the left (quieter) or to the right (louder). A "detent" indicates "normal" volume. Press the button back after setting.

Effect channel volume *

Set the power output of the rear channels by pressing the button to extend the control, pulling it out as far as possible and turning it left or right. A "detent" indicates "normal" power output.
Press the button back after setting (Dolby Surround Pro Logic only).

* The "Effect" button will work only during CD playback or FM in Surround Pro Logic mode.

pg. 165 Audio systems - specifications

HU-613/HU-803

Output: 4 x 25 W
(HU-803 optional center speaker) 1 x 25 W plus 4 x 50 W through the supplementary amplifier
Impedance: 4 Ohm.
Voltage required: 12 V, negative ground
Radio
Frequency range:
AM 530 - 1710 kHz
FM 87.7 - 107.9 Mhz

Alarm (HU-803 only)

"Alarm!" is displayed when an alarm message is sent. The function is used to warn the driver of a serious accident or disaster situation.

Dolby noise reduction is manufactured under license from Dolby Laboratories Licensing Corporation.

"Dolby", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation. The Dolby Pro Logic Surround System is manufactured under licence from Dolby Laboratories Licensing Corporation.

CAUTION:
The optional supplementary amplifier (HU-803) may be mounted under the front passenger's seat. If the floor of the car has become soaked for any reason, do not turn on the radio. This would cause damage to the amplifier. Contact a Volvo retailer.

pg. 166 Audio systems - general information

Cassettes

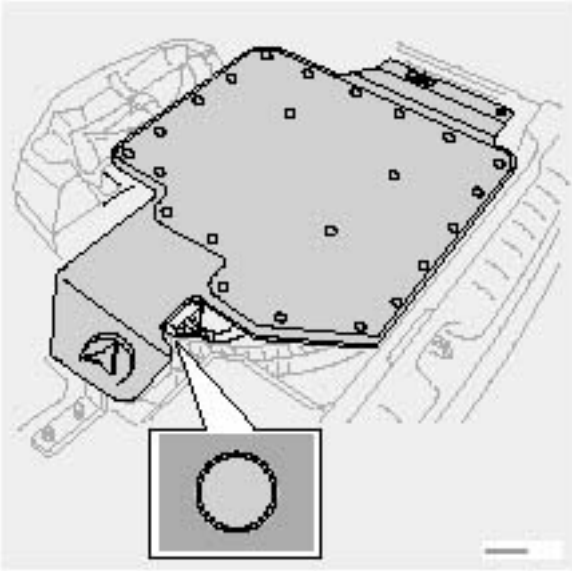
- Store cassettes in their cases.
- Do not touch the tape surface with your fingers.
- Tapes should not be exposed to direct sunlight or extreme temperatures.
- Keep tapes away from oil, grease and other contaminants.
- For optimal tape deck performance Volvo does not recommend the use of C-120 tapes.
- Take up slack using a pen or a pencil before inserting a cassette in the cassette slot.

Cassette cleaning

We recommend the use of the Volvo Cleaning Cassette available as a genuine Volvo accessory. Regular use improves sound quality, cleans vital parts and prevents tape tangle.

Compact disc care

- Before using a new disc for the first time, remove any burrs in the center/outer edge by running the stem of a pen or similar object around the hole/edge of the disc.
- Use high quality discs only.
- Keep the discs clean. Wipe them with a soft, clean, lint-free cloth, working from the center outwards. If necessary, dampen the cloth with a neutral soap solution. Dry thoroughly before using.
- Never use cleaning spray or antistatic liquid. Use only cleaners specifically made for CD's.
- Use discs of the correct size only (3.5" discs should never be used).
- Do not put tape or labels on the disc itself.
- Volvo does not recommend the use of plastic outer rings on the disc.
- Condensation may occur on discs/optical components of the changer in cold winter weather. The disc can be dried with a clean, lint-free cloth. Optical components in the CD changer may, however, take up to one hour to dry off.
- Never attempt to play a disc which is damaged in any way.
- When not in use, the discs should be stored in their covers. Avoid storing discs in excessive heat, direct sunlight or dusty locations.



Volume control - Subwoofer

Turn the knob clockwise to increase volume. Turn the knob counterclockwise to lower volume or switch off the subwoofer.

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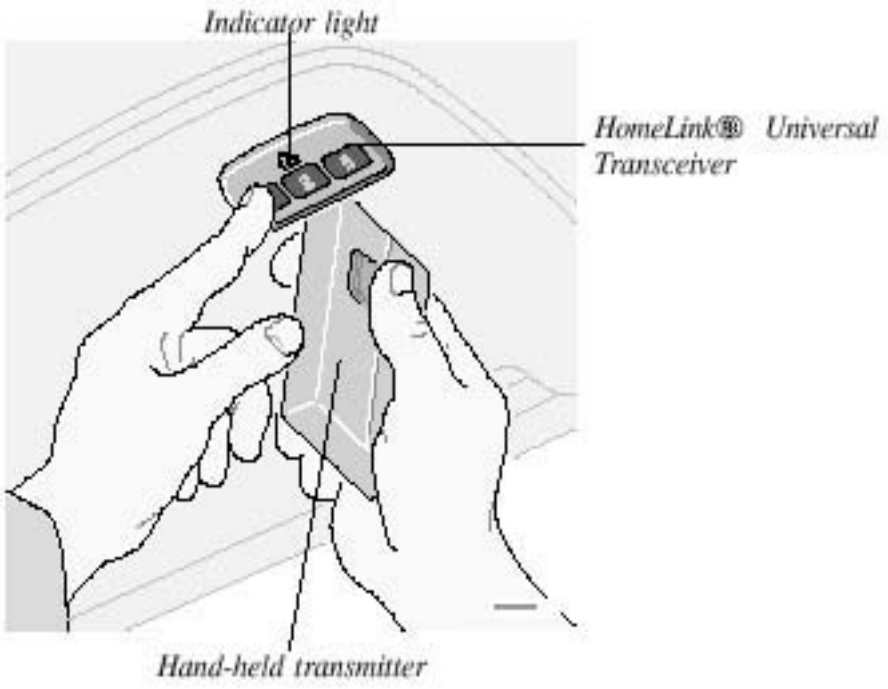
HomeLink® Universal Transceiver (option)

pg. 167 HomeLink® Universal Transceiver (option)



HomeLink® Universal Transceiver

HomeLink® is an advanced system that can be programmed to learn the codes of three different remote controlled-devices (e.g., garage door openers, remote lighting, entry door lock). HomeLink®'s sun visor-mounted transceiver, powered by your car's electrical system, may then be used in place of your hand-held remote controls.

NOTE: For your security, the HomeLink® Universal Transceiver is designed to **not** function if you lock your car from the *outside*.

Programming the transceiver

1. The ignition switch must be turned to the "accessory" position (II) before programming the HomeLink® Universal Transceiver.

2. Begin by erasing all 3 factory default channels. Hold down the two outside buttons (buttons 1 and 3 in the illustration) on the HomeLink® Universal Transceiver for about 20 seconds, until HomeLink®'s indicator light begins to flash. Then release the buttons.

3. Hold your hand-held transmitter (garage door opener, for example) 2 to 5 in. (5 to 12 cm) away from the HomeLink® surface, keeping the indicator light in view. For placement questions, contact HomeLink® toll-free 1-800-355-3515 (Internet: www.HomeLink.com).

4. Using two hands, push and hold both your hand-held transmitter's button and the transceiver button you wish to program. The indicator light will flash first slowly, then rapidly. Rapid flashing tells you the HomeLink® button has been successfully programmed. Release both buttons.

5. If you are programming a rolling code-equipped device (e.g., garage door opener or entry door lock), refer to "Programming rolling codes" on the next page to complete the programming process.

Repeat steps 3 and 4 to program the other two transceiver buttons.

If, after several attempts, you are unable to successfully train the HomeLink® Universal Transceiver to learn your hand-held transmitter's signal, contact HomeLink® toll-free 1-800-355-3515 (Internet: www.HomeLink.com).

WARNING!

- If you use HomeLink® to open a garage door or gate, be sure no one is near the gate or door while it is in motion.
- Do not use the HomeLink® Universal Transceiver with any garage door opener that lacks safety "stop" and "reverse" features as required by federal safety standards. (This includes any garage door opener model manufactured before April 1, 1982) A garage door opener that cannot "detect" an object, signalling the door to "stop" and "reverse" does not meet current federal safety standards. Using a garage door opener without these features increases the risk of serious injury or death. For more information on this matter, call toll-free 1-800-355-3515 (Internet: www.HomeLink.com).

pg. 168 HomeLink® Universal Transceiver (option)

NOTE - Canadian residents:
During programming, your hand-held transmitter may automatically stop transmitting. To successfully train HomeLink®, continue to hold the HomeLink® button. At the same time, repeatedly press and hold

your hand-held transmitter's button at two-second intervals until HomeLink® has learned your transmitter's code. The HomeLink® indicator light will flash first slowly, and then rapidly to indicate that the button has been successfully programmed.

Determining if your garage door uses a rolling code
Determine, in one of the following ways, if your garage door uses a rolling code system and is manufactured after 1996:

- Refer to the garage door opener owner's manual for verification.
- If your hand-held transmitter appears to program the HomeLink® Universal Transceiver but the programmed button does not activate the garage door, your garage door opener may have a rolling code.
- Press the programmed HomeLink® button. If the garage door opener has the rolling code feature, the HomeLink® indicator light flashes rapidly and then glows steadily after approximately 2 seconds.

To train a rolling code garage door opener, follow these instructions after programming the desired transceiver button according to "Programming the transceiver." The help of a second person may make training easier.

1. Locate the training button on the *garage door opener motor head unit*. The location and color of the training button may vary. If you encounter difficulty, refer to the garage door opener owner's manual or call toll-free 1-800-355-3515 (Internet: www.HomeLink.com).

2. Press the "training" button on the garage door opener motor head unit until the "training" light comes on.

3. Press and release the programmed HomeLink® button. Press and release the programmed HomeLink® button a *second* time to complete the training process. Some garage door openers may require you to do this procedure a *third time* to complete the training.

The programmed button on your HomeLink® Universal Transceiver should now operate your garage door opener. The original hand-held transmitter can also be used, as desired, to operate the garage door.

The remaining two HomeLink® buttons can be programmed in the same way. In the event of any problems in programming the HomeLink® Universal Transceiver, call toll-free 1-800-355-3515 (Internet: www.HomeLink.com).

Operating the HomeLink® Universal Transceiver
Once programmed, the HomeLink® Universal Transceiver can be used in place of your hand-held transmitters.

To operate, the key must be turned to the "accessory" position (II) or the engine must be running. Press the programmed HomeLink® button to activate the garage door, driveway gate, security lighting, home

security system, etc.

Your original hand-held transmitters may, of course, be used at any time.

Erasing programmed buttons
Individual buttons cannot be erased. To erase all three programmed buttons:

1. Turn the ignition key to the "accessory" position (II).

2. Hold down the two outside buttons on the HomeLink® Universal Transceiver for about 20 seconds, until HomeLink®'s indicator light begins to flash.

3. Release both buttons.

The HomeLink® buttons can be reprogrammed using the procedures described on the previous page.

(HomeLink® information continues on the next page)

pg. 169 HomeLink® Universal Transceiver (option)

Reprogramming a single HomeLink® button

1. Press and hold the desired HomeLink® button. Do not release the button until step 3 has been completed.

2. When the indicator light begins to flash slowly (after approximately 20 seconds), position your hand-held transmitter 2 to 5 in. (5 to 12 cm) away from the HomeLink® surface.

3. Press and hold the hand-held transmitter button. The HomeLink® indicator light will flash first slowly, then rapidly. When the indicator light flashes rapidly, release both buttons.

The previously programmed device has now been erased and the new device can be activated by pressing the HomeLink® button that has just been programmed. This procedure will not affect any other programmed HomeLink® buttons.

NOTE:
- Retain the original transmitter(s) for future programming procedures (e.g., if you purchase a new car).
- For your own security, erase all programmed buttons on the HomeLink® Universal Transceiver when you sell your car.
- Metallic sun protection films should not be used on any windows in a car equipped with HomeLink®

Universal Transceiver. This could interfere with the transceiver's function.

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Accessory Installation - Important Warning

- We strongly recommend that Volvo owners install only genuine, Volvo-approved accessories, and that accessory installations be performed only by the factory-trained technicians at your authorized Volvo retailer.
- Genuine Volvo accessories are tested to ensure compatibility with the performance, safety, and emission systems in your car. Additionally, your authorized Volvo retailer knows where accessories may and may not be safely installed in your Volvo. In all cases, please consult your authorized Volvo retailer before installing any accessory in or on your car.
- Accessories that have not been approved by Volvo may or may not be specifically tested for compatibility with your car. Additionally, an inexperienced installer may not be familiar with some of your car's systems.
- Any of your car's performance and safety systems could be adversely affected if you install accessories that Volvo has not tested, or if you allow accessories to be installed by someone unfamiliar with your car.
- Damage caused by unapproved or improperly installed accessories may not be covered by your new car warranty. See your Warranty and Service Records Information booklet for more warranty information. Volvo assumes no responsibility for death, injury, or expenses that may result from the installation of non-genuine accessories.

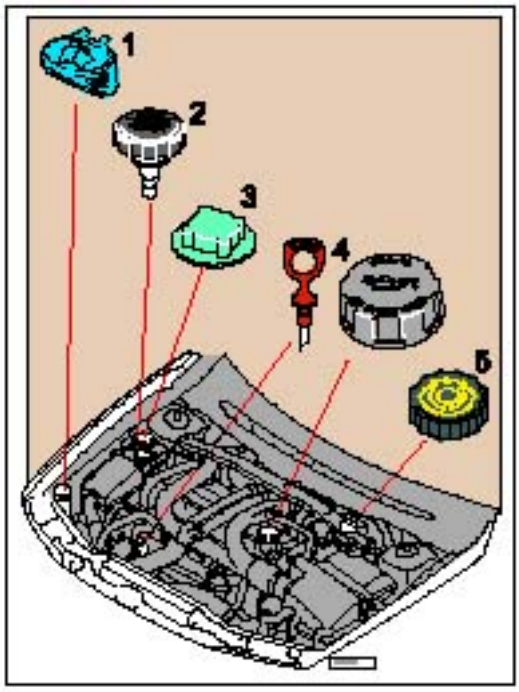
Driver Distraction

- Driver distraction results from driver activities that are not directly related to controlling the car in the driving environment. Your new Volvo is, or can be, equipped with many feature-rich entertainment and communication systems. These include hands-free cellular telephones, navigation systems, and multipurpose audio systems. You may also own other portable electronic devices for your own convenience. When used properly and safely, they enrich the driving experience. Improperly used, any of these could cause a distraction.
- For all of these systems, we want to provide the following warning that reflects the strong Volvo concern for your safety:
- Never use these devices or any feature of your vehicle in a way that distracts you from the task of

driving safely. Distraction can lead to a serious accident.

- In addition to this general warning, we offer the following guidance regarding specific newer features that may be found in your vehicles:
- Never use a hand-held cellular telephone while driving. Some jurisdictions prohibit cellular telephone use by a driver while the vehicle is moving.
- If your car is equipped with a navigation system, set and make changes to your travel itinerary only with the vehicle parked.
- Never program your audio system while the vehicle is moving. Program radio presets with the vehicle parked, and use your programmed presets to make radio use quicker and simpler.
- Never use portable computers or personal digital assistants while the vehicle is moving.

A driver has a responsibility to do everything possible to ensure his or her own safety and the safety of passengers in the vehicle and others sharing the roadway. Avoiding distractions is part of that responsibility.



The following should be checked regularly: *

1 Washer fluid reservoir should be filled with water and solvent (wintertime: windshield washer anti-freeze). See page 133.

2 Power steering - When cold, the level must not be above the COLD mark and when hot it must not be above the HOT mark. Top up if the level drops to the ADD mark with ATF fluid. See page 137.

3 Coolant level should be between the expansion tank marks. Mixture: 50% anti-freeze and 50% water. See page 131.

4 Engine oil level should be between the dipstick marks. The distance between the marks represents approx.
1.6 US qts (1.5 liters). See page 135.

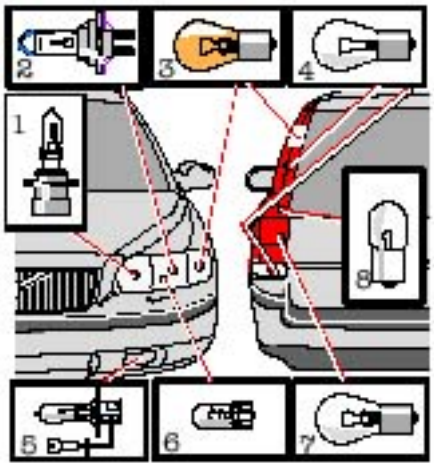
5 Brake fluid - check, without removing the cap, that the level is above the MIN mark. Use brake fluid DOT 4+. See page 137.

* Engine oil should be checked each time the car is refuelled.

VOLVO
Volvo Car Corporation
Göteborg, Sweden

Octane rating, see page 84.

Tire pressure, see label located on the rear edge of the right front door.



Bulb	Power	Socket	US no.
1	60 W	HB 3	-
2	55 W	H 7	-
3	21 W	BAU 15d	-
4	21 W	BA 15s	1156
5	55 W	H 1	-
6	5 W W	W2.1x9.5d	1157NA
7	21/4 W	BA 15d	
8	5 W	BA 15s	67

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Bulbs Power Socket US no.